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IN THE HEART OF AFRICA

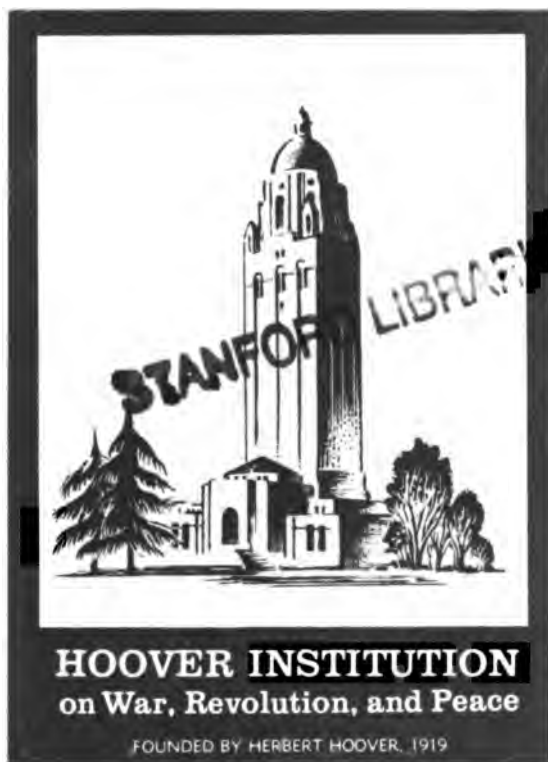


ADOLPHUS FREDERICK
DUKE OF MECKLENBURG

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IN THE HEART OF AFRICA



ERUPTION OF NAMLAGIRA

From a Painting by W. Kuhnert

IN THE HEART OF AFRICA

BY
THE DUKE ADOLPHUS FREDERICK
OF MECKLENBURG

TRANSLATED BY
G. E. MABERLY-OFFICER

WITH MAPS AND NUMEROUS ILLUSTRATIONS

CASSILL AND COMPANY, LTD.
London, New York, Toronto and Melbourne
1910



PREPARATION OF SAMPLAGIRA

9. *in* 10. *in*

IN THE HEART OF AFRICA

BY

**THE DUKE ADOLPHUS FREDERICK
OF MECKLENBURG**

*Adolphus Frederick, Duke of Mecklenburg
H. S. Gamm*

TRANSLATED BY

G. E. MABERLY-OPPLER

WITH MAPS AND NUMEROUS ILLUSTRATIONS

CASSELL AND COMPANY, LTD.
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GRATEFULLY DEDICATED
TO
HIS ROYAL HIGHNESS
FREDERICK FRANCIS IV. OF MECKLENBURG

PREFACE

THE following pages contain an account of an expedition which roamed through extensive tracts of Central Africa under the author's leadership during the years 1907-8.

This expedition had for its aim a systematic investigation of the German East African Protectorate, the Central African rift-valley, in its expansion from Lake Kiwu to Lake Albert, and finally the north-eastern confines of the Congo State. It ended by crossing the Dark Continent.

The plates used to illustrate the text have been selected from amongst some 5,000 photographs. Though some of them may not possibly pass muster before very critical eyes, it must be remembered that many of them had to be developed in our tents. The troublesome dust blown up by gusts of wind adhered at times to the coated sides of the plates, and did not, of course, improve them. Those of the undeveloped plates sent on the long route from the centre of Africa to Germany, despite most careful packing and hermetical sealing, were subjected to the greatest changes of temperature, which have often worked injuriously. It is mainly due to the skill and pains bestowed upon them by those who developed them that many plates which were feared to be hopelessly spoilt were saved.

I owe a deep debt of thanks to those who helped in such a spirited manner with magnificent material support, and, in fact, enabled the expedition to take place. I harbour a special feeling of gratitude towards Geheimrat Hans Meyer, of Leipzig. The successful inauguration of the expedition and the entire, carefully studied plan of its execution were due to his initiative. It was through his exertions as President of the Commission for

Preface

exploring the German Protectorate that the German Colonial Office was induced to devote a notable sum to the exploration of the German territory over which we travelled.

The example set by the Imperial Colonial Office was followed by the German Colonial Company, the Royal Prussian Academy of Sciences, and the Museum for Folklore, Berlin.

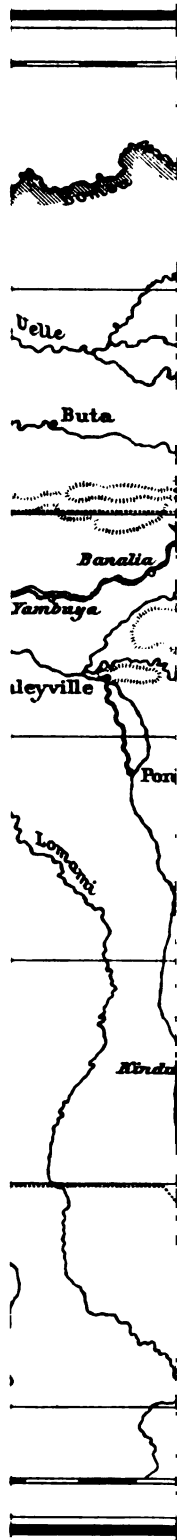
Meanwhile, the interest in the undertaking had penetrated to private circles. Thus in some cities committees had been formed for the purpose of furthering the enterprise. It is due to their help that after the return of the expedition, the great collections, portions of which were exhibited publicly in Berlin, in 1909, were enabled to be made over to German museums and German scientific institutions.

I am no less grateful to the military authorities in command of the colonial troops, as well as to the Government of German East Africa, for the readiness with which they met my wishes in every way.

I must beg an indulgent reader not to criticise the style of writing too severely. Brought up as a soldier, and grown to maturer years on a horse's back, I have devoted myself to most pursuits except writing. Should the narrative but suffice to satisfy modest demands, I owe it to the kindness of Professor Dr. Steinmann, of Schwerin, who, in the most obliging and friendly way, looked the manuscript through for me.

I must not close these lines without an expression of grateful recognition to the members of the expedition for their work during the undertaking. It is to their strenuous, indefatigable efforts alone that the expedition owes the splendid acknowledgment paid to it on its return to the Home Country.

THE AUTHOR.



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THE DUKE ADOLPHUS FREDERICK OF MECKLENBURG

IN THE HEART OF AFRICA

CHAPTER I

PREPARATIONS FOR THE JOURNEY

I WAS first induced to visit Africa in 1902. During the month of March that year I was in Ceylon, where I had been hunting in the neighbourhood of Anaradjapura. Whilst there I received an invitation from Lord Curzon, the then Viceroy of India, asking me to accompany him on a tiger hunt or two, and I was very nearly unfaithful to my plan of having a look at Africa. However, the land which I knew from books, and the history of whose discovery and development had possessed my mind from earliest youth up, exercised an unconquerable fascination over me. I am thankful to-day that I did not allow myself to be led away by the tempting offer and that, abandoning India, I threw in my lot with Africa.

After visiting Daressalam and the great settlements in East and West Usambara, and whilst on a hunting tour in the Kilwa hinterland which I had embarked upon in company with the Governor, Mr. Rhode, District Judge, and Count von Götzen, I learnt to know, and became thoroughly imbued with, the spirit and charm of African camp life.

In the year 1904 a plan matured for a further journey to the land of my desire, but even at that period my ambitions soared higher than a mere hunting and pleasure trip. I hoped to connect a scientific mission with my new expedition, and acting on the advice of the authorities of the Berlin Zoological Museum, I decided in favour of the eastern shores of Lake Victoria, a

territory which had hitherto contributed but little of zoological interest to the national museums.

Accompanied by Count Günther Pfeil and Captain von Jena, together with Laboratory Director Knuth and my servant, I made my way to Mombasa via Naples, and from there by the English railway to Lake Victoria. After an exciting journey across the lake, to an accompaniment of thunderstorms and gales, in a fragile English steam-launch, which offered but little resistance to the elements, we arrived at the small military outpost of Schirati, where we were heartily welcomed by the commander, Captain Göring. From there we broke off in the direction of Ikoma, and after roaming for months through the district watered by the Rivers Orangi and Boledi, which abounded in game and had scarcely been trodden by man, we felt a greater interest than ever in this protectorate of ours.

It was here that I first met the energetic leader of my last expedition, Lieutenant von Wiese and Kaiserswaldau, who had been entrusted with the very responsible duty of defending the outpost station of Olgoss against the attacks of the Masai.

In conjunction with him, in Berlin, a year later, I planned the scheme of the expedition which I have endeavoured to describe in the following chapters and which should be of some value for the systematic and scientific exploration of unknown stretches of country, a scheme which, certainly, was subjected to a good many variations, until it assumed its final and concrete shape.

The original intention of reaching the source of the Nile from Lake Tschad presented so many difficulties that it had to be abandoned as impracticable. Instead, after prolonged consultation with our most famous specialists and scientists, Professors Brauer, Matschie, von Luschau, Waldener, Engler and Branca, I determined to march via Lake Victoria to Ruanda, and also to visit the district between Lake Kiwu and Lake Albert, whence, travelling westwards, we should reach the basins of the Rivers Ituri-Aruwimi and Uelle.

When first I made my plans known to the various scientific

Preparations for the Journey 3

bodies, I was not surprised to meet with opposition at all points. After weeks of unremitting effort, however, the possibility of the successful execution of my design increased daily.

After the Colonial Office, through the intervention of Privy Councillor Hans Meyer of Leipzig and the praiseworthy efforts of the Geographical Commission for the Exploration of Protectorates, were finally assured of the real seriousness of my aims, the large sum of money absolutely indispensable for such an undertaking was raised by dint of ceaseless endeavour. The Colonial Office set the example, and, aided by friendly committees, especially at Leipzig, Cologne, Hanover, Dresden and Berlin, it became possible to fix the start of the expedition early in 1907. I was able, therefore, to communicate the good news and the names of those who were to take part in the expedition to Lieutenant von Wiese, who had in the meantime returned to East Africa and without demur had been granted two years' furlough so that he might join the party.

Lieutenant Weiss applied for the post of topographer and mathematician; in fact, he seemed predestined for it, as he had been entrusted with the survey work during the great expedition of 1902-1905 in tropical Africa, which laid down the boundaries between the German and the English protectorates.

From the Geographical and Palæontological Institute at the Berlin University I managed to secure Herr Egon Fr. Kirschstein, to whom was allotted the special task of collating material respecting the Virunga volcanic groups of Kiwu. The Botanical Institute sent me Dr. Mildbraed, the Zoological Institute Dr. Schubotz, and the Royal Ethnological Museum appointed Dr. Czekanowski to join the expedition. As bacteriologist and doctor I received Dr. von Raven from the Institute for Infectious Diseases. The party was completed by my servant Weidemann, who had twice before accompanied me to the dark regions of the earth, and by Non-commissioned Officer Czechatka of the East African Colonial Force, who had also received furlough for the purpose of accompanying me.

Thanks to the courtesy of the Colonial Force, thirty-five

Askari were assigned to me on the assumption that they quitted the force in order to be enlisted in the troops of the expedition under similar conditions. In order to distinguish this body of men from the active colonial force and to convey them without let or hindrance to the Congo State, the head-dress ordinarily used by that body—the *tarbouche* with the company number—was taken from them and was substituted by a red fez. Khaki-coloured trousers were issued instead of the usual blue ones, and the men in charge were distinguished by blue, yellow, and red badges. Only the ordinary arms were carried, but in addition to the regulation ammunition-pouches cartridge-belts were slung across the body.

These Askari were selected by Lieutenant von Wiese from the Daressalam Company. Besides these, he recruited a number of "boys," cooks, and general helpers.

On the 21st of April Wiese left Daressalam for Mombasa with the military escort and the folk above mentioned. On his arrival he entered into negotiations for the transport of the goods expected from Europe in the beginning of May to Lake Victoria. These goods consisted for the main part of scientific instruments and apparatus, drugs and equipments of first-class quality, as well as cases of stores for the Europeans. The commissariat was apportioned in such a way that for every month each European received as his share one box of flour for baking bread, one box of preserved foods, and one containing mineral waters, etc. The various articles of barter required for different districts, comprising stuffs, pearls, caps, bright-coloured cloths, copper wire, knives, mirrors, and the woollen blankets intended for the colder districts, were purchased later on by Wiese.

I. SCIENTIFIC APPARATUS

(a) <i>Geological</i> —	LOADS
One large universal instrument for astronomical and geodetical observations	2
One photographic theodolite with two camera stands ...	2

Preparations for the Journey 5

	LOADS
One small universal instrument	1
Two surveyor's tables with telescopic graphometres and stands	2
Compass, square and stands	1
One standard compass	2
One deviation magnetometer	1
Two stands for magnetic instruments	1
Two boiling thermometers, barometer, two reserve compasses, two large and six small chronometers	2
Drawing-paper and materials	1
Scientific books, tables and charts	2
One large reserve universal instrument	2
 (b) <i>Geological</i> —	
Hammers, blowpipe apparatus, gold-working dishes, etc.	10
 (c) <i>Zoological</i> —	
400 litres alcohol	20
Arsenical soap for preparing skins	5
Alum for dressing hides	10
Potato-flour for cleaning skins	3
Traps for beasts of prey	2
Tin-plate and glass vessels, nets, linen, boxes for insects, preparing instruments, etc.	23
 (d) <i>Botanical</i> —	
Condensing lenses, tin boxes, linen bags, naphthalene, packing thread, etc.	6
Thirty pieces trellis pressing, tin-plate fittings, alcohol, indiarubber plaster for sealing up chests	3
Four climbing-irons	1
10,000 sheets paper, 1,000 sheets millboard for botanical collections, packed in twenty-four tin-lined cases	26
 (e) <i>Ethnological</i> —	
Plaster of Paris	4
Phonograph and plates, etc.	3
Books, paper, etc.	2

6 In the Heart of Africa

(f) *Medicines, etc.*—

LOADS

Drugs, bandages, instruments, microscope, test-tubes, invalid-hammock, etc.	40
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II. ARTICLES OF BARTER

Assorted beads	45
Various stuffs	12
Miscellaneous	1
Kanga (native cloth)	10
American " notions "	19
Kaniki	3
Woollen blankets	10
Pearls	17
Wire	4
Salt	8

III. GENERAL LOADS

Traps for wild animals	6
Two folding boats	4
Ten riding outfits: saddles, snaffles, stirrups, horse-rugs, rope halters, drinking-buckets, water-sacks, curry- combs; one reserve set of harness	1
One cauldron with supports for scalding horns and skulls	1
400 signal-lights	2
Spades, axes, files, knapsacks, hammers, pincers, lanterns, illuminators, etc.	10
Cartridges for guns, small shot and pea-rifle ammunition	20
Photographic plates	12
Magnesium light cartridges	2
Tool-chests	1
Gramophone	1
Photographic materials, developers, basins, paper, frames, drying trays, etc.	7
Aniline plates	6

Preparations for the Journey

7

IV. PERSONAL MATERIALS							LOADS
Ten tents (three loads each)	...	...	...	...	...	...	30
Two awnings	...	...	...	...	...	...	2
Ten beds	...	...	...	...	...	...	10
Chairs and tables	...	...	...	...	...	...	14
Washing-utensils, pail, stands	...	...	...	...	...	...	10
Rope	...	...	...	...	...	...	3
Petroleum	...	...	...	...	...	...	8
Washing soap	...	...	...	...	...	...	3
Candles (320 lb.)	...	...	...	...	...	...	8
Cooking apparatus	...	...	...	...	...	...	4
Food-baskets	...	...	...	...	...	...	3
Filters, pump-kettles and strainers, boiler floats, etc.	...	...	...	...	...	...	1
Cigars	...	...	...	...	...	...	9
Four patrol tents	...	...	...	...	...	...	4
Washing-bags with sheets and bed linen	...	...	...	...	...	...	10
Provisions	...	...	...	...	...	...	200
Beverages	...	...	...	...	...	...	180
Flour, rice, etc.	...	...	...	...	...	...	180
Reserve loads	...	...	...	...	...	...	50

As it would have been out of the question to convey this vast number of chests and cases along with us by means of one big bearer column, I ordered the most indispensable portion off to Bukoba, and the remaining and larger part to Entebbe. Finding, too, that it would be exceedingly difficult to provide adequately for any length of time for such a caravan as ours, more especially as we were to traverse districts where but little sustenance would be obtainable for our 700 men, Lieutenant von Wiese proposed to establish stations along the line of march, which would be visited at stated periods by supplementary caravans despatched from Entebbe. These extra caravans were to be chiefly employed in conveying commissariat for the Europeans and bearers, loads of goods for barter and scientific apparatus, etc. This disposition worked out capitally; all the caravans, excepting one, reached their destined stations at the

appointed times, in spite of long marches lasting two and three months.

The formation of seven such depots was found to be necessary :—

- (1) Bearers' commissariat caravan to Mpororo, 200 men.
- (2) Bearers' commissariat caravan to Lake Mohasi, 100 men.
- (3) Bearers' commissariat caravan to Kissenji at the north end of Lake Kiwu, 300 men.
- (4) Supplementary caravan to Kissenji with European commissariat and barter goods, 200 men.
- (5) Commissariat caravan to Kasindi at the north end of Lake Albert Edward, 600 men.
- (6) 200 loads of rice and beans and 300 cases commissariat for Europeans to Beni in Congo State.
- (7) 500 loads of rice, etc., and 100 loads for Europeans containing provisions and scientific apparatus, to Irumu, also in the Congo State. Total, 2,230 men.

Of course, in addition to utilising these various depots, the expedition was to make daily purchases of native products from the villages. The stores at the depots were to be broached only in the steppe districts and in such places where provisions could not be procured from the natives.

To illustrate how much heavier are the expenses of a big caravan in Central Africa than in the more accessible territories near the coast lines, I might state that a bag of rice worth 5 rupees at Entebbe is valued at 16 rupees when it reaches Lake Kiwu by a bearer transport.

In order to gain some idea of what an expedition of 700 men manages to consume in the way of food, it may be mentioned that during the first fourteen days we disposed of no fewer than 20,000 bunches of bananas (about 50 bananas to the bunch), 300 sacks of peas and bags of flour, over 30 bullocks, various game, etc.

Wiese with his transport arrived at the terminus of Kisumu



TROOPS OF THE EXPEDITION



MHAIA

Preparations for the Journey 9

by the Uganda Railway and steamed thence in the English boat *Winifred* to Muansa, the chief German post on Lake Victoria. Here he secured a very useful set of bearers, 300 Wassukuma, and despatched them to Bukoba on the west coast of Lake Victoria, the starting-point of the expedition.

On arrival he was enabled by the friendliness of the Resident, Captain von Stuemmer, to recruit another 250 followers from the Wahaia. This was the first occasion for a very long time on which these natives were employed as bearers outside their own country. They had been left alone as, generally speaking, they were not thought much of as carriers. It was feared that in the event of the bananas giving out, the lack of their staple article of diet might prove a serious matter. I will say at once, that though the Wahaia did not equal the Wassukuma in efficiency, they marched well with light loads; and that in spite of a total change of conditions as regards diet, their health left nothing to be desired. Whereas the Wassukuma, who are in considerable demand as bearers, make great pretensions and must receive their eight rupees monthly in addition to free food and tent supplies, cooking pots and woollen blankets, the Wahaia are content with a wage of four rupees, apart from allowances. The experiment made by this expedition with the Wahaia may therefore possibly be of some interest to the Government of German East Africa. Later on, at Lake Kiwu, we replaced these Wahaia by 200 Manjema, obtained from Tanganjika through the good offices of Captain Göring of Udjidji.

Seven additional mules were purchased to serve as riding mounts, and were conveyed to Bukoba, where the ten half-bred Maskât and native donkeys ordered from Muansa had already come to hand.

Early in May I was advised by telegram that the whole company requisite for the undertaking, a total of 700 souls, was in readiness at Bukoba.

The caravan was composed as follows:—

One *Betschausch* (field-cornet), 2 *Schausch* (sergeants), 5

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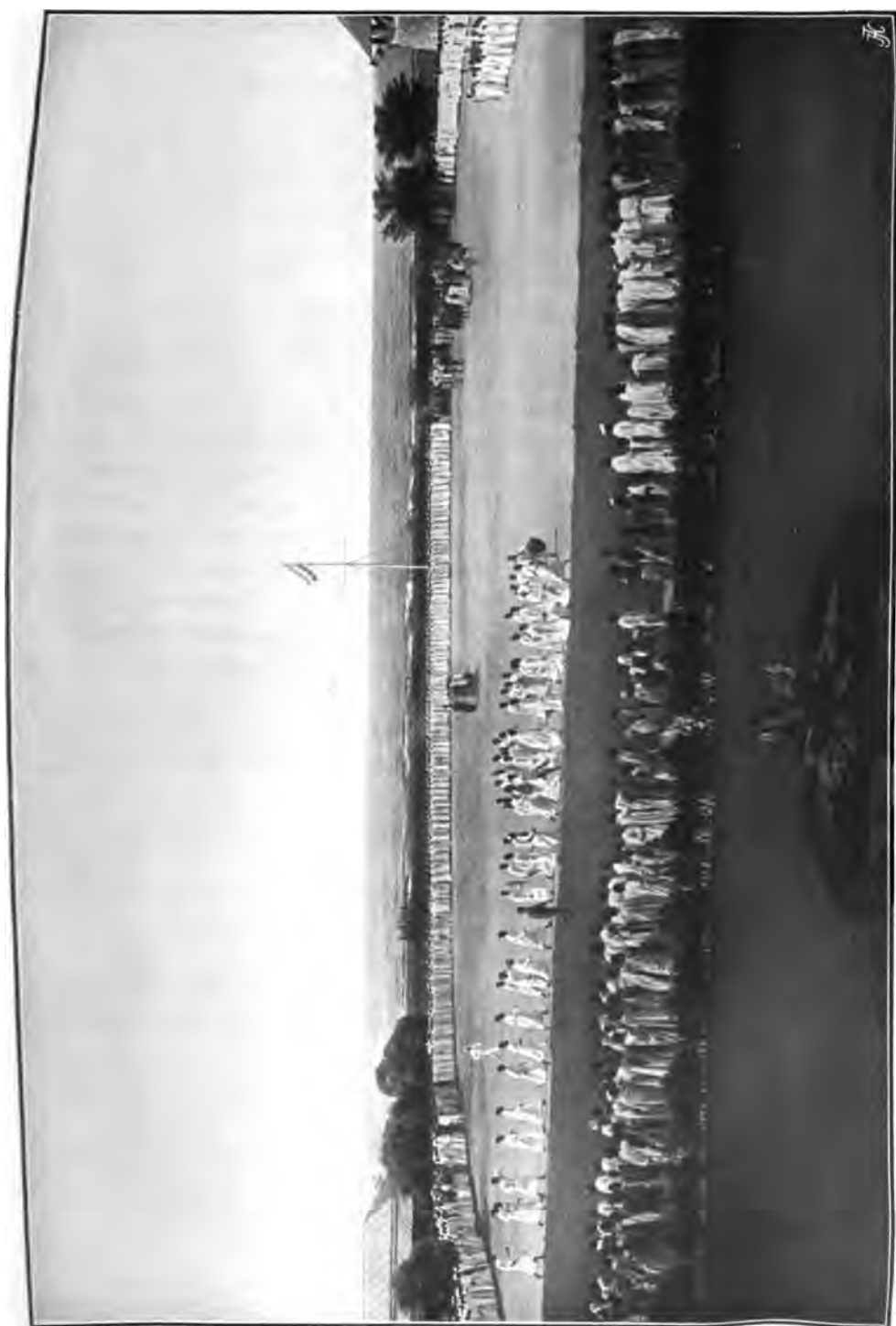
Ombascha (corporals), 2 acting-*Ombascha*, and 25 *Askari*; 20 European "boys," 10 assistant "boys," 4 cooks, 4 kitchen "boys," 5 assistants to prepare specimens, 34 native soldiers, 33 "boy" carriers, 2 interpreters, 300 carriers for the European loads, 200 carriers for the ammunition, barter-goods, followers' stores, water, instruments, photographic materials, collections, reserve loads, etc., etc.

In the meantime I had not been inactive in Europe. The undertaking having been placed on a sound basis, the responsible task of obtaining the necessary equipment was proceeded with. The experience I had gained on several smaller previous expeditions stood me in good stead. During the time that I was hurrying from store to store, giving orders and testing the goods delivered, my correspondence accumulated to such an extent that I was only able to cope with it and answer the numerous questions asked by dictating the replies. At the same time I found it necessary to hold a series of conferences with the representatives of the scientific institutions interested and various members of the expedition, the majority of whom had not previously travelled in Africa.

I breathed freely at last, when, during the first week of April, the large number of packages had been put together and were shipped at Hamburg.

Having received two years' furlough I formally gave up the duties of major, which I had fulfilled for two years on the staff of the Second Dragoon Regiment of Guards, a regiment which had grown very dear to me. My regimental comrades, however, as well as numerous other Berlin acquaintances, rivalled each other in their efforts to make my last few evenings pleasant ones.

I left Berlin with Raven on the 9th of May. A large number of friends and acquaintances accompanied us to the railway station, and the last few minutes in the Home country were spent in animated conversation.



GREETING THE SULTANS AT BUKOBA

CHAPTER II

LAKE VICTORIA AND THE KAGERA BASIN

ON the 13th of May I embarked at Naples with the other members of the expedition on the ss. *Bürgermeister* of the D.O.A. Line for Mombasa, which we reached on the 30th of the same month. To my surprise I found all our goods, even those sent by the last steamer, already stowed in the Customs' sheds, for I had thought them to be at sea. Thus we were forced to look after the forwarding of them ourselves. However, through the kind courtesy of the English authorities, whose broad-minded business methods always work so beneficently, all difficulties were smoothed over.

Soon the great collection of chests and cases was on its way to the railway station, where we started loading up the trucks. Two passenger carriages for myself and party were courteously placed at my disposal for the journey to Kisumu, the terminus of the railway at Lake Victoria, where we arrived safe and sound on the 6th of June.

Here the *Sybil* was lying, one of those smart English 500-ton boats which negotiate the traffic on Lake Victoria.

After a brisk run over the lake we reached the capital, Entebbe, which is at the same time the seat of the Government of Uganda. In the evening we were present at a very successful entertainment at the house of the Acting-Governor, which wound up delightfully with a grand illumination of the great drive which winds in and out in serpentine form from the palace of the Governor to Kai. Then we clambered aboard the *Sybil* again for the night.

The sleepers' eyes were still heavy and tired as we weighed

anchor in the murky dawn after a heavy thunder-shower on the 9th of June, to push on to the starting point of our wanderings. And again day had passed into darkness when we at last beheld the lights of Bukoba in the distance. Excitement, easily to be understood, seized us all as we endeavoured to pierce the dusk with our telescopes. We approached closer and closer, and as the smart little craft glided through the narrow straight between the "Toteninsel" and the mainland of Bukoba, rockets and Bengal lights shot up from the shores, conjuring up as if by enchantment phantom-like silhouettes in a most effective way. The *Sybil* still glided on a short distance, then the siren shrieked, the anchor rattled down into the deep, and the ship shivered and lay still. We had reached our goal.

Presently we heard the measured strokes of the oars of a cutter, and a few moments later we were able to welcome aboard our Bukoba hosts, Captain von Stuermer, First Lieutenant von Wiese, First Lieutenant von Einsiedel, Lieutenant Lincke (recently furloughed), and Dr. Marschall. There was simply no end to inquiries and reports, and it was far into the night before we separated.

An imposing entry had been planned to take place on the morning after our arrival. Going up on deck at sunrise, according to my custom, glass in hand, to scrutinise the river banks of the country that was now to be our home for twelve months, a most charming spectacle lay before my eyes.

From the fort of Bukoba and from the houses lying farther back, which were used as residences by the sultans of the district when visiting the town, long, regular processions gradually resolved themselves from a huge jumbled throng of human beings. The people, clad for the occasion in long white *kansu*,* marched with a fanfare of trumpets and the music of native bands down to the landing-stage. The sultans, who led their own troops, rode at the head. The processions appeared simply endless, new columns constantly coming up. It was indeed a proud manifestation of the development of Germany's

* *Kansu*, long Arabian shirt.



DISTRIBUTING STORES



EXCHANGING GREETINGS WITH THE SULTAN KAHIGI OF KIANJA AT BUKOBA

power that was revealed to us from the river banks, and it was increased in value by the entirely unconcealed appreciation accorded by the English officers and all the crew of the *Sybil*, to whom such a scene was entirely new. The march past lasted for an hour and a half, and was completed by the arrival of the 7th Company, stationed at Bukoba, and the troops obtained by Lieutenant von Wiese for the expedition, flying the German flag and that of my own country, Mecklenburg.

Some seven thousand people awaited us on the banks as I landed, escorted by Captain von Stuemmer (the others had preceded us), for the welcome at ten o'clock. The soldiers and the military police, together with the sultans' troops, came to the salute. All the bands struck up, and in the midst of their strains, which reverberated far away across the lake, there suddenly penetrated the customary ear-deafening clamour, shouting and hand-clapping from the squatting crowd, whilst above this wild din the melodious greeting of the Wahaia rang clearly out: *Kamerêre, rugāwa, Kamerêre, rugāwa.*

After a hearty exchange of salutations with the sultans, by shaking of hands and a few words in Suaheli, which is the language generally used here, I was at last able to direct my attention to the newly enlisted carriers for the expedition, amongst whom I found many who were familiar to me from the 1905 journey. These fine fellows seemed genuinely pleased to see me, and came up and stretched out their hands in a loyal fashion.

At the house of the Resident, whither we were escorted by the whole crowd, I greeted the missionaries of the White Fathers stationed at Marienberg, at whose head stood Bishop Hirth. We then sat down to a repast, in the middle of which Professor Koch, who had returned from a tour of inspection, appeared quite unexpectedly. I was also given an opportunity of admiring the musical skill of the mission school band.

The days we spent there passed quickly with native festivals, at which dancing and the beating of the *goma* went on day and night, and with visits in Marienberg and to the residence of

the Grand Sultan Kahigi at Kianja. Seeing that in consequence of our arrival at Bukoba and our imposing reception all the Grand Sultans were assembled together, it was as much an act of courtesy as of prudence to return all visits as far as possible. This is a point of etiquette on which African potentates are very keen, and of course a successful result to our labours greatly depended upon the material support of the sultans.

At length the morning of the 17th of June dawned, the day which was to see us start away into the interior of Africa. The marshalling of a caravan with such a large number of carriers was by no means an easy task. Yet thanks to Lieutenant von Wiese, who had taken time by the forelock and exercised and trained our forces and taught all the carriers their proper places, the long procession managed to get under way without much trouble as early as seven o'clock in the morning. All Bukoba turned out to form an escort to the departing caravan, and on each side of us and in front of our Askari, who led the van with trumpet blasts, the way was densely blocked with natives.

It is an old and time-honoured rule that the first day of a journey, such as ours, should be a fairly short one, as experience has shown that in the general excitement and flurry of the start out indispensable articles are apt to be overlooked. So we halted after a three-hours' march at Gera, the residence of the Sultan Mutahangarua of Kisiba. We were received, as at Kianja, with great pomp and circumstance and conducted by a long line of white-clad people to a guest-house which stood in the midst of a broad open space, in the vicinity of which the tents were pitched. Thousands of natives streamed into the residence, dancing began and the beating of drums, blowing of pipes and the clanging of the *goma* echoed through the mountains far into the night.

The influence of the European on the manners and habits and in the houses of the sultans is very remarkable. Here, as at Kianja, the shape of the houses and also the interior arrangement had been perfectly imitated from the Europeans. The native round huts served as dwellings for the people alone. The sultan's palace exhibited the same long-shaped



**BODYGUARD OF SULTAN KAHIGI OF KIANJA (CAPTAIN VON STUEMER
STANDING NEXT TO THE SULTAN)**



SULTAN MUTAHANGARUA OF KISIBA WITH HIS ORCHESTRA

roof as ours. The interior was divided into various compartments. Chairs, tables, and even a chest of drawers were among the appointments, while on one of the walls an oleograph of the German Imperial pair made a fine show.

This sultan has the reputation of being the most progressive in the district. He takes much interest in all European matters and equipments, many of which he endeavours to introduce. For instance, he made us carefully explain the construction of the folding boats which we had brought with us, and continue explaining till he had fully grasped the idea. He is a beginner in the German language, but likes to practise it, and that he might not forget a new sentence he had learned whilst he was inspecting the boat, he kept on murmuring: "*Das ist ein boot—das ist ein boot.*"

We had also to go and visit the old mother of the sultan, who lived in one of the round huts which was built in somewhat more elaborate style than the rest. She and the sultan, and, indeed, all the members of the reigning family of the Bukoba province, are descended from the ancient and distinguished race of Wahima, with whom later on we were to become more closely acquainted in Ruanda.

The next morning a start was made, as usual, by sunrise. The routine was pretty well the same every day for the next few months, and consisted as follows: At five o'clock the Arabian call was blown, then ensued the hurried collecting together of tents, strapping up of loads and breakfast in primitive form. Shortly before 6 a.m. the Askari and the carriers, with their loads properly strapped, took up their positions. Lieutenant von Wiese, to whom I had entrusted the sole charge of the Askari and the carriers, adopted an excellent plan whereby he could pick out the loafers and sick among them. He would send on those carriers who were ready with their loads a mile in advance, so that any unappropriated burdens would at once be noticed. Immediately the last load had been picked up by its proper carrier, the signal to advance was sounded; two previously selected Askari marched at the

side of the Europeans, and the main body at the head of the carrier column, the rear of which was again brought up by two Askari and at least two Europeans.

And then with flags flying and songs sung by the carriers, accompanied for a time by the rhythmical beating of sticks against the cases, the huge caravan set out on the march.

Even at this stage all our Europeans were not ready for the march. Lieutenant Weiss and Kirschstein, the geologist, were still absent. They had asked for a few days' leave of absence for the purpose of adjusting instruments, a matter which was better undertaken at Bukoba. Before any expedition sets out it is essential that all instruments should be subjected to a supreme final test as to their accuracy, as they are liable to suffer in transit by sea and rail. Weiss, therefore, very properly, laid stress upon their undergoing a final examination. Apart from this he utilised the opportunity to take astronomical time and date computations. Bukoba was excellently situated for such work, as its exact position had been very accurately determined by the trigonometrical survey of the Anglo-German boundary expedition. Weiss decided, therefore, to calculate the longitudinal measurements by the aid of his seven chronometers.

Dr. Czekanowski had already marched off to Marienberg.

Early in the morning of the 18th of June we came upon a cave picture near Buanja, which had shortly before been discovered by the Mission Brothers. The walls of the cave were covered with strange paintings which formed an interesting record of primeval man's ideas of art.

One industrial feature of the province is the manufacture of material for wearing apparel out of bark. The woof is fabricated from the bark of the lumbue tree, and is often of considerable length. These stuffs, which attain an almost transparent fineness of texture through being beaten with wooden hammers, are figured with patterns, for which purpose a mixture of clay dissolved in water is used, and are then dried in the sun.

At Buanja Dr. Czekanowski fell in with us again. He had already been very active and obtained possession of a consider-



THE EXPEDITION STARTING FROM BUKOBA



CAVE DRAWINGS NEAR BUANJA

able number of skulls and other anthropological specimens, amongst which were five complete skeletons.

The following morning at sunrise we reached that lazily flowing stream, the Ngono, a deep tributary of the Kagera, over which dense layers of mist were hovering. The sun was struggling painfully to show its pale face through the damp and nebulous veil. Thanks to the foresight of Captain von Stuemmer, the crossing was rapidly effected and without the slightest contretemps. A number of boats were in waiting, and with the aid of powerful oars the transit was completed in an hour and three-quarters.

The beautiful country through which our way had so far led us began now to change into dreary, swampy wastes. The Bukoba officials have with great difficulty constructed a fine *barra-barra* (broad road) through these, which has contributed in no small degree to the development of traffic and commerce in the adjoining thickly populated districts. Speaking generally I may say that nowhere else have I met with such excellent roads as those prevailing in the Bukoba province. Splendidly kept highways intersect the country in all directions, and a brisk traffic is maintained upon them, particularly with the chief city.

Gazing down from the heights, we were soon afforded a view of the Kagera winding in and out, encircled by a broad belt of papyrus. Following its course, we came to the village of Kifumbiro, a small outpost close to the river, under the command of a non-commissioned officer. The main body of the caravan halted at this spot for a few days, whilst the various members of the expedition employed the time in making a few individual investigations.

Mildbraed and Schubotz visited the German portion of the Buddu forest for zoological and botanical purposes, whilst Captain von Stuemmer, Wiese, Raven and I wandered along the left bank of the river towards Kitengule in search of zoological matter. On our way messengers met us with tidings of a herd of buffaloes, and as we were anxious to kill one for the purpose of comparison with those we might come across later on, we

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stationed ourselves at the rear of the troop. Unfortunately we had our trouble for nothing. In spite of rising in the grey of the morning, being all in our places, and getting wet with cold dew, and though we sighted these striking-looking creatures several times, we failed to bring off a lucky shot. To compensate us, however, Lieutenant von Wiese brought down three rhinoceroses, which proved to be the only ones we met. Lieutenant Weiss alone of us saw any more of these animals—at Mtagata in Karagwe. Their boundary line is limited by the Kagera on the northern and western side.

The different spheres of activity which our ten members represented soon manifested themselves, and thus the big caravan was continually being divided into sections. We adhered to this principle the whole way through, and with the best of results.

Still, apart from these various interests, the size of the caravan alone made it necessary to strike different marching routes if we desired to avoid the fear of famine. Thus at Kifumbiro we had to separate. After arriving there, Weiss and Kirschstein soon broke off again to march southwards from the Kagera over the hot springs of Mtagata, through Karagwe to Mpororo, while the rest of us selected the route to the north of the river.

Whilst crossing the torrential Kagera in a folding boat early on the 25th of June, three salvos from the guns of the Kifumbiro outpost thundered a farewell over our heads.

Here we left Kisiba to enter into the Buddu territory. After an easy and pleasant march in the cool morning air, we neared the Katojo residence of the reigning Sultan Ruhikika, who welcomed us with great ostentation. All his people and his police troops drew up in line. Mildbraed and Schubotz met us here again. After a long march, keeping always to the *barrabarra*—a particularly painful journey to me in consequence of a touch of lumbago I had acquired from the excessively cold nights—we reached the camp at midday in the burning noontide heat.

Whilst hitherto banana plantations had formed the most



WAHAIAS PREPARING BARK



FRAMEWORK OF A WAHAIA HUT : BUKOBA DISTRICT



THE HOT SPRINGS OF MTAGATA AT KARAGWE

noticeable feature of the Bukoba province, the country now gradually began to assume a more steppe-like character, and game was met in abundance. We camped in the centre of a steppe on which candelabrum-shaped euphorbiaceous plants grew almost exclusively, which were more typical than any I had seen before. You could scan the horizon on all sides. Here and there a graceful Swala antelope started up from the low-lying grass, and now and then a startled rietbock flew away from us across the plain. The little ducker* whisked off in alarm from cover to cover, and sharply defined against the golden-red glow of the setting sun, which was bathing everything in an indescribable flood of splendour, could be seen the unlovely form of the lyre antelope eyeing us in perplexity and bewilderment.

Our route now lay via Kiangwe, Kenschambi, Niawatura to Kesimbili, where in 1902 the Anglo-German Boundary Commission laid the stones which mark the limit of British territory.

This march was one of the most interesting in the whole of this province, and certainly the finest as regards scenery. The path, which rose up steeply over high masses of rock, led directly to the rapids of the wild-rushing Kagera, whose banks, bordered with broads bands of papyrus and phoenix palms, would have enchanted any artist's eye. The temperature, corresponding to the altitude, was very cool in the early morning and evening hours, the average record at sunrise being 8 degrees, 28 degrees at noon, and 20 degrees Celsius at seven in the evening. These temperatures conduced in a marked degree to the capacity for work of both Europeans and carriers. The evening hours beneath the starlit heavens were almost cold, and a warm European coat was decidedly welcome. We were exceedingly glad to experience this weather, as it indicated the close of the rainy season, which had commenced almost simultaneously with our arrival at Bukoba. It was most fortunate in respect to our collections, as we were thus enabled to send away our zoological and botanical specimens in first-class condition.

At the boundary of the Bukoba province Captain von Stuermer

* *Ducker*, dwarf antelope.

was obliged to take leave of us and return to Bukoba. His departure caused genuine regret, for apart from the loss of a delightful companion, his presence had meant really lavish victualling for us. At all the store depots at which we had so far rested thousands of bananas were lying ready for use, which had been collected and brought along by the natives.

This condition of things was now quite altered. The fine *barrabarra* came to an abrupt end. The country through which we passed was most sparsely grown, the soil was bad, the natives very few in number and very timid, running away and hiding themselves at our approach.

This attitude was attributable to the rebelliousness of their chief, Kisliwombo, who refused allegiance to the neighbouring Sultan Msinga of Ruanda, the lord of this territory. As the Ruanda Residency desired the subordination of all the neighbouring sultans to the sovereignty of Msinga, it became evident that an official order on the matter was being expected, and was believed to have arrived when our caravan came into view. It was a difficult matter to allay the people's fears. By means of repeated assurances of friendship and promises of *baksheesh*, however, we were finally enabled to secure a few goats and other articles of food.

It is no matter for surprise, therefore, that we hurried away from this poverty-stricken place in order to get forward to Rufua, an abandoned station in Mpororo, where we intended to make fresh plans. Shortly before, on the 1st of July, we had an agreeable surprise in meeting Lieutenant Wintgens, for which our thanks were due to Captain von Grawert, the Ruanda Resident. Accompanied by him, we soon afterwards reached the deserted outpost, the dilapidated buildings of which afforded us scant, though welcome, accommodation. Its elevated position enabled us to obtain a fine view of the undulating steppe.

On arrival at Rufua we spent a few quiet days in perfecting our latest specimens and in carefully packing them ready for despatch. Thus on the 6th of July we were again in a position to send away a large collection of ethnographical, zoological,



EUPHORBIA STEPPE AT KATOJO

botanical, and geological specimens by special caravan to Bukoba for transport to Europe.

The feverish activity displayed in camp on one of these so-called "rest days" is hardly describable. Writing went on uninterruptedly in every tent. The zoologist would sit bending over his collection, busy and eager with his microscopes, designations, and labelling. Every creature, however tiny, received a number, and this was noted in the ledger. Around the botanist's tent a number of bulky presses containing dried plants might be observed, and at their side innumerable rolls of paper for drying purposes, which would suddenly be whirled up into the air by a sharp gust of wind. Then the learned doctor, with streaming hair, would come flying out of his tent in great alarm about his valued treasures, calling out for volunteers to arrest the deserters. The ethnographer could be seen in the midst of a circle of natives whom he had gathered about him, and who, unconcernedly and with stoical indifference, permitted him to make all kinds of measurements and take any number of photographs.

The occasional smile seen flitting across the black man's countenance at the white man's ("*Msungu's*") doings and the responsive confidential nod from a neighbour meant "*wasimu*" —crazy! My faithful Weidemann was to be seen busily engaged in apportioning the Europeans' food stores between the *mpishi* —the cook—and the special caravans. Each member of the expedition had been allotted a certain number of Askari, "boys," carriers, and carrier leaders whilst the expedition lasted. Thus the whole big caravan was subdivided into ten smaller self-dependent *safari*—caravans. In this way irksome new orders were limited to a minimum—in fact, were only needed in case of sickness and death—and the staff worked admirably side by side with their leaders. The distribution of stores and barter goods, however, took place each month at headquarters.

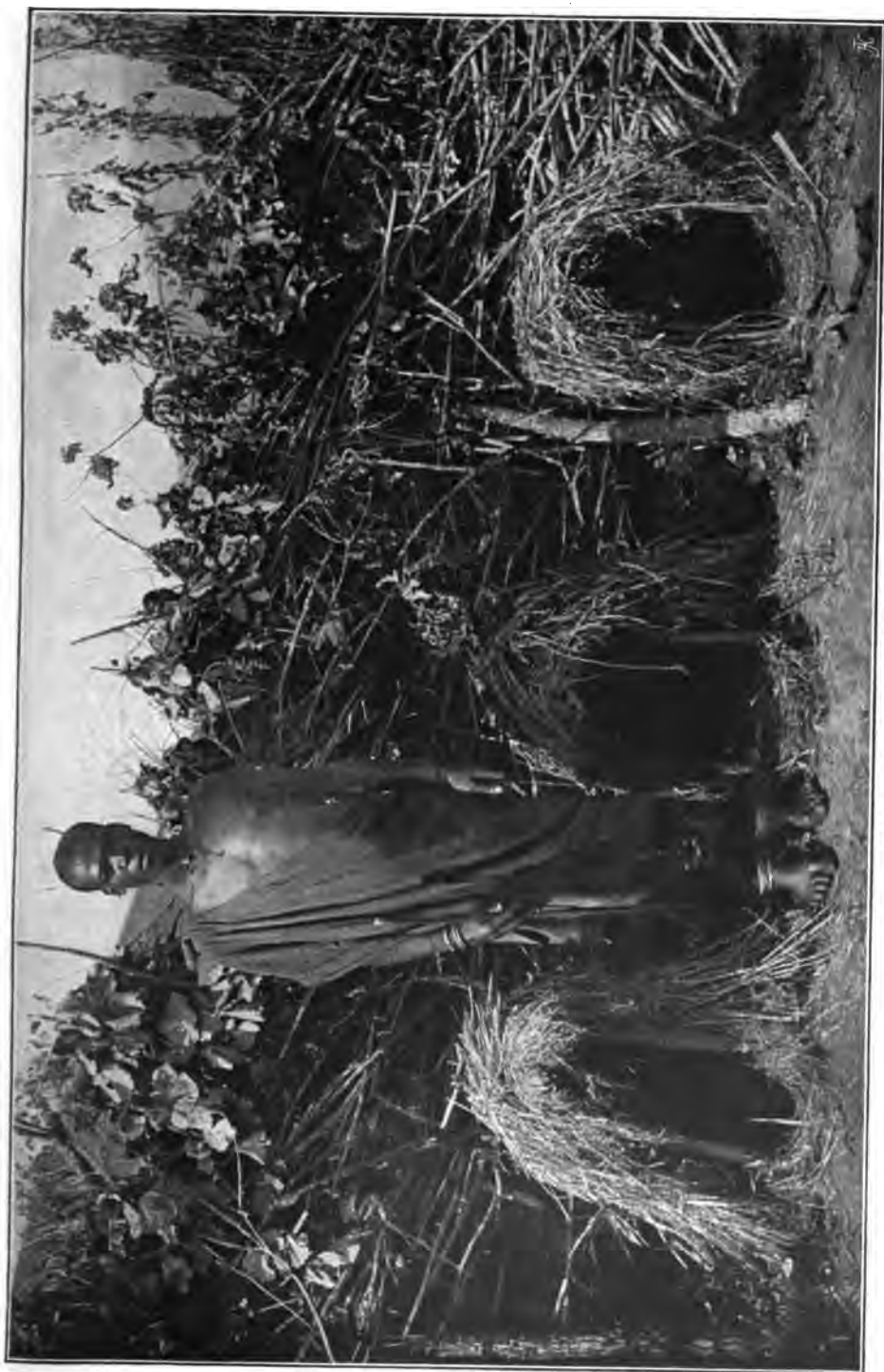
In front of the caravan-leader's tent barter goods for the mountain districts might be seen heaped up, and here would congregate the sultans whose people had brought commissariat along and who wished to receive payment. Differences of opinion

frequently occurred. Quite shameless demands would be quickly suppressed by the leader with a few forcible expressions or sinister motions of the hand. The keeping of the register roll of a caravan of 700 men strong was a highly responsible task for Lieutenant von Wiese, who was admirably supported in the work by Sergeant Czechatka. The name of every single man and the amount due to him for the month had to be entered in the chief register. In districts where Indian or Arabian shops afforded an opportunity for making purchases, any one of them was permitted to draw a cash advance. The value of such advance was made to the applicant in stuffs, beads, or copper wire, as desired, and then entered in the register as wages paid. The balance of any wages due was to be paid out in ready money at the close of the expedition at the chief city of the respective districts, such as Entebbe, Bukoba, Udjidji, and Daressalam, and by the local authorities there, previously appointed to act as paymasters.

As the men always applied for advances at the larger places—for instance, later on, at Kissenji on Lake Kiwu—it may be possible to form some idea of the immense amount of extra work this sort of thing entailed, and the difficulty of keeping a true and accurate register.

Whilst at Rufua I received a letter from Lieutenant Weiss, in which he begged that instead of going to Mpororo he might be permitted to remain at Karagwe, south of the Kagera, and from there to journey across the Kagera ferry to Kanjonsa. He desired this in order that he might erect anew the signalling apparatus with which his work on the Anglo-German Boundary Commission had familiarised him, as the region south of Mpororo was to be surveyed cartographically. At the same time he asked that Kirschstein might be allowed to remain with him. This collaboration of topographer and geologist proved to be a most admirable arrangement, not only at that time, but later on also.

For the first time in Africa the photo-theodolite was employed for topographical charts. The peculiar characteristic of this instrument is that it enables the dimensions of the photo-



GHOST-HUTS: MPORORO

graphic plans to be ascertained in any given direction, a quality of great value to geologists. And thus the topographer and the geologist laboured loyally together; they worked out the whole geological projection in profile from Lake Victoria to Kiwu.

New instructions were issued at Rufua. Dr. von Raven and Mildbraed were to march out with the chief caravan through the inhabited regions west of the Kakitumbe watercourse to the western end of Lake Mohasi for the purpose of studying the swamp flora of this lake, and to examine into the hæmotosis of the inhabitants there. Lieutenant von Wiese was sent south to the Kakitumbe to assist Lieutenant Weiss, the signalling expert, with the triangulation, and afterwards to push on to Kakome, at the eastern end of Lake Mohasi. Weiss and Kirschstein were to proceed southwards, west of the Kagera, to make a cartographical and geographical survey of the region lying between Mohasi and South Mpororo, hitherto untrodden by any European, and therefore not even opened up at all. Wintgens, Dr. Schubotz and I proposed making a general tour of inspection throughout this territory, and then meeting the other members of the party at Lake Mohasi. The reunion of forces was fixed for the beginning of August, after a month's interval.

To make amends for the loss of my European dogs, which had been smitten by the disastrous coastal fever, and were lying very sick in quarantine at Mombasa, we procured two native dogs. They were young, strong, well-shaped animals, yellow-brown in colour, with distinctive white markings and pendulous ear-laps; they bore a certain resemblance in form to our hunting dogs, and possessed an individuality of their own, the like of which I have seen nowhere else. We were bothered a good deal at first by their wild nature and their attachment to their native village, for they used to gnaw through the cords with which we tied them to the tent. In the end, however, we concluded a treaty of friendship with them, and once properly used to their new masters, they held loyally by the caravan. Only one of these animals, however, native to Mombasa, but of German strain, survived the journey to the coast and reached Germany at the finish.

CHAPTER III

UNTRODDEN PATHS

ON the 5th of July I set out in company with Schubotz and Wintgens to explore the unknown country lying between the Kagera and the little river Kakitumbe. As none of us was acquainted with the actual conditions of the district, we kept at first in the vicinity of the well-watered brook. It was cool here; in fact, quite cold at night, and in the early morning a dense mist lay over the river valley. We found that our Celsius thermometer registered only 7 degrees, and we quickly crept into our winter coats.

And so we drew away southwards along the course of the Kakitumbe. A hunter's surprise awaited me here. In the course of a short reconnaissance with Wintgens I observed, at a distance of not many yards from our camp, a strong troop of elands with a few powerful bulls among them. Ducking down immediately and keeping close to the ground, I crawled through the grass till I managed to get within shooting distance, when I brought down a young animal of a dark yellow colour, whose appearance had specially attracted me. Having secured the skin, we cut off the head and horns, and proceeded to fix up three hyena traps. Next morning we were surprised to find merely a broken-off under-jaw in the snare and nothing more. The hyena had actually managed to draw the trap some 400 yards away into the bush, and then forfeited its under-jaw as the price of escape. Truly a striking proof of the almost incredible hardness possessed by certain classes of African animals.

In the meantime our zoological collection had assumed such dimensions that Schubotz stayed in the camp to arrange and



METHODS OF HAIR-DRESSING OF THE WAPORORO

tabulate it. Wintgens and I, on the other hand, made a little dash forward into the unexplored region to the eastward in the direction of the Kagera, accompanied by very few carriers and with provisions for one day. It is not possible with the pen adequately to describe the wonderful sensation of joy and victory that stirs the soul of the explorer as he roves along virgin tracks never trodden before by European foot. Involuntarily his thoughts fly wandering back, with a feeling of admiration, to those early pioneers of European civilisation, who with undaunted bravery and without those comforts which nowadays tend to alleviate the hardships of travel, spent years in exploring the dark paths of strange countries and facing unknown perils. A glow of reflected splendour seemed to illuminate our path.

It was dark when we left the camp, but before very long the light of day appeared in the east. The steppe, sparsely covered with acacia shrub, spread out before us in hilly chains. From summit to summit we progressed, scouring all the country around and below us with our glasses. Solitude encircled us. To the east the bush dwindled away to treeless *buga*,* on which roamed numberless herds of every kind of game. In the light of the dawn the striped skin of the zebra and the bulky yellow body of the eland rose up in striking contrast to the dark waste spaces. We saw various kinds of bustard, and ever and anon some great denizen of the air would soar heavenward in majestic flight.

From a mountain top we finally espied a stream rushing along the yellow steppe in its sap-green, red grass setting, and discovered it to be the small river known as the Kalangassa by the natives, which drains into the Kagera and discharges south of Kanjonsa. Its banks were crowded with tremendous herds of game—zebras intermingled with lyre-antelopes, reed-buck and duykerbok of every kind. I thought I would take a snapshot of the zebras, and galloped after a troop, already in flight, leaving my boy a long way behind with my rifle. Suddenly I heard successive shots fired behind me in the distance. As I had an understanding with Wintgens that no ordinary game but buffaloes

* *Buga*, open steppe.

and lions alone were to be fired at—the elephant is never met with in these parts—I knew that the shots could only mean buffalo or lion. So I turned back hurriedly, and soon caught sight of Wintgens accompanied by two Askari coming towards me with rifles at the ready. "*Bana Lieutenant amepiga simba*" ("the Herr Lieutenant has shot a lion") shouted an Askari from the distance.

"Where is he hiding?" I asked.

"I do not know; we have lost him here by the mountain."

"Did he not stand up in front of you?"

"No; and we have not seen the grass moving either."

"Then he must be close by."

"Quite near, *bana*."

There could be no doubt that the lion was lying between Wintgens and me. It seemed almost as if his pursuers had passed over him as he was crouching in the grass. As Wintgens came up with me without sighting the quarry, the latter possibility was the only feasible one. Having snatched my gun from the hands of my boy, who had rushed up breathless, we placed our followers in position again, and walked back across the same locality. Suddenly one of the Askari at my side stopped sharply, and, with characteristic gesture, pointed his index-finger half right to where the steppe merged into the tall reed-grass by the river, and, snapping finger and thumb together, yelled out with eyes staring and a long-drawn "*aa-aa-aa*," "*Tasama, bana sultani, simba wengi, wengi sana*" ("Look, bana sultani, many, many lions!"). Indeed, I actually beheld five lions hurrying to the protecting river with that heavy, slouching gait peculiar to their kind. This meant a good, smart run for us if we were to cut off their retreat, for once in the high sedge they were as good as lost. As the troop happened to be nearest Wintgens, he got there first. With one shot through the head, he finished the earthly career of a lioness. One of the others, which spun round, vanished into the reeds. With two Askari and a boy I followed up a third trail, which showed distinctly in the grass for a few hundred feet till it disappeared in the bush. We now circled



OUR TOPOGRAPHER AT WORK



WANJAMBO GIRLS FROM MPORORO

round the scrub for a while, but as no trails could be discerned leading out of it, we concluded that the lion must still be lying there, only a few yards away from us. What was to be done? Ordering the Askari to get to the other side of the scrub and try to scare the lion out by yelling, I took up my position just a little way off. One of the Askari, a Masai, who, after his soldiering experiences, was not particularly enamoured of peaceful pursuits—a splendid, grand-looking fellow like all his warlike race, and my constant companion in all my roamings—approached the scrub in most fearless fashion in order to ascertain what it concealed. On a sudden the blood-curdling roar of a lion resounded three times in quick succession, and the beast sprang out with flattened ears and gaping jaws right among us. We all fell back, except the Masai, who was a few paces off on my left. Shouting aloud and mad with excitement, he stretched out his left arm, in which he held his rifle, against the lion. But the beast seized him in the twinkling of an eye. One paw smashed down on the arm, whilst the jaws buried themselves in the hips of the unhappy man. The next moment they were rolling together like a ball on the ground. At the same instant I raised my gun to my shoulder and gave the lion a bullet at five paces; but in the hurry and excitement the aim was bad, and the beast with two great bounds fled back growling into the scrub before I had time to think of a second shot.

The Masai lay on the ground streaming with blood, but had sustained no really serious injuries; his left arm, into which the lion had dug his claw, was rather severely mauled, and the left side bore the scars of the bite for many a long day. I hastened to bandage the nearly senseless man as best I could with my handkerchief, so as to staunch the flow of blood. A draught of water, coupled with the incredible stoicism of the black man in the face of wounds and injuries, enabled him to recuperate so quickly that he was able to sustain the five-hour return journey to the camp without collapsing.

Shortly after, whilst engaged on a search for the wounded lion, I was very much struck by the pluck evinced by the black

Askari. One fellow, named Amdalla, and an *Ombascha*,* one of whom had witnessed the incident, were intrepid enough to follow up the trail in the water, which reached to their hips, and into the almost impenetrable bog-grass thicket, expecting every moment to come within arm's length of the wounded and bleeding beast. Being aware of the aimlessness of this proceeding, I stopped the pursuit, but it cost me considerable trouble to dissuade the men from their dangerous resolve. I have no doubt but that the lion, exhausted by loss of blood, met his death in the river.

Dusk had already set in when we started to return, and the night soon enwrapped us. We missed Schubotz, who, we understood, had crossed over to the other bank of the river with his Askari and a few men to follow up a herd of equine antelopes. There was nothing unusual in this, but as the hands of the clock pointed to nine, and we still waited in vain, we fired off a rocket as a signal to him. We followed this up with further rockets, and also discharged our rifles, but no reply came back.

As Schubotz's continued absence created some uneasiness, an Askari patrol was sent out in the most probable direction. At last we heard voices in the distance, and saw a flashing of lanterns, which we took to be those of the Askari. It was some time, however, before we heard the splashing of water betokening the return of the missing men.

Schubotz had been overtaken by nightfall whilst in pursuit of his game, and had lost his bearings in the darkness. Time after time he came to one of the windings of the Kakitumbe, and was misled thereby. At the end, too, he and his mule fell into a deep pitfall. Both were got out without injury, but the mule had stuck so fast in the bottom of the pit that the ground had to be dug up all round before its legs could be released.

As it was quite apparent that a better place than Kalangassa could scarcely be found for zoological research, we marched back there the next morning to take up our quarters. We pitched our

* *Ombascha*, corporal in the colonial force.



WESTERN END OF LAKE MOHASSI



WOMEN MAT-WEAVING AT KISSAKA

tents hard up against a mass of rock rising out of the *buga* and opposite Mount Ndama, two hundred kilometres from the river-course, with an unparalleled view of the country lying in front of us. Whilst en route to our new headquarters we observed a number of people on the summit of Mount Njerubanga, apparently occupied in the construction of a signalling station. In order to attract their attention and to determine whether they were members of the caravan, we took drastic measures. We set the steppe on fire. Our signal did not fail of its effect, for we were soon answered by a similar illumination. A patrol ascertained later that the party belonged to Wiese's caravan, the Askari leader of which did not know the whereabouts of his chief.

It proved, generally speaking, an extremely difficult matter to maintain steady communication with the other column in this undulating region, in which some of the hill summits achieved an elevation of 1,500 metres. The district is deserted, and the inhabitants at the back of the mountain fringes were very shy of Europeans. This quite unjustifiable timidity gave rise to many mistakes, often of a decidedly disagreeable nature. The people furnished lying or inaccurate reports, so that the patrols often lost their way and returned with their missions unaccomplished. At first we used to mark the position of the camp by signalling with lights in the evening hours, a method which was then successful; but later on our signals were obscured by the denser foliage in the south and hilly country, and we thus often remained without tidings of one another for some length of time.

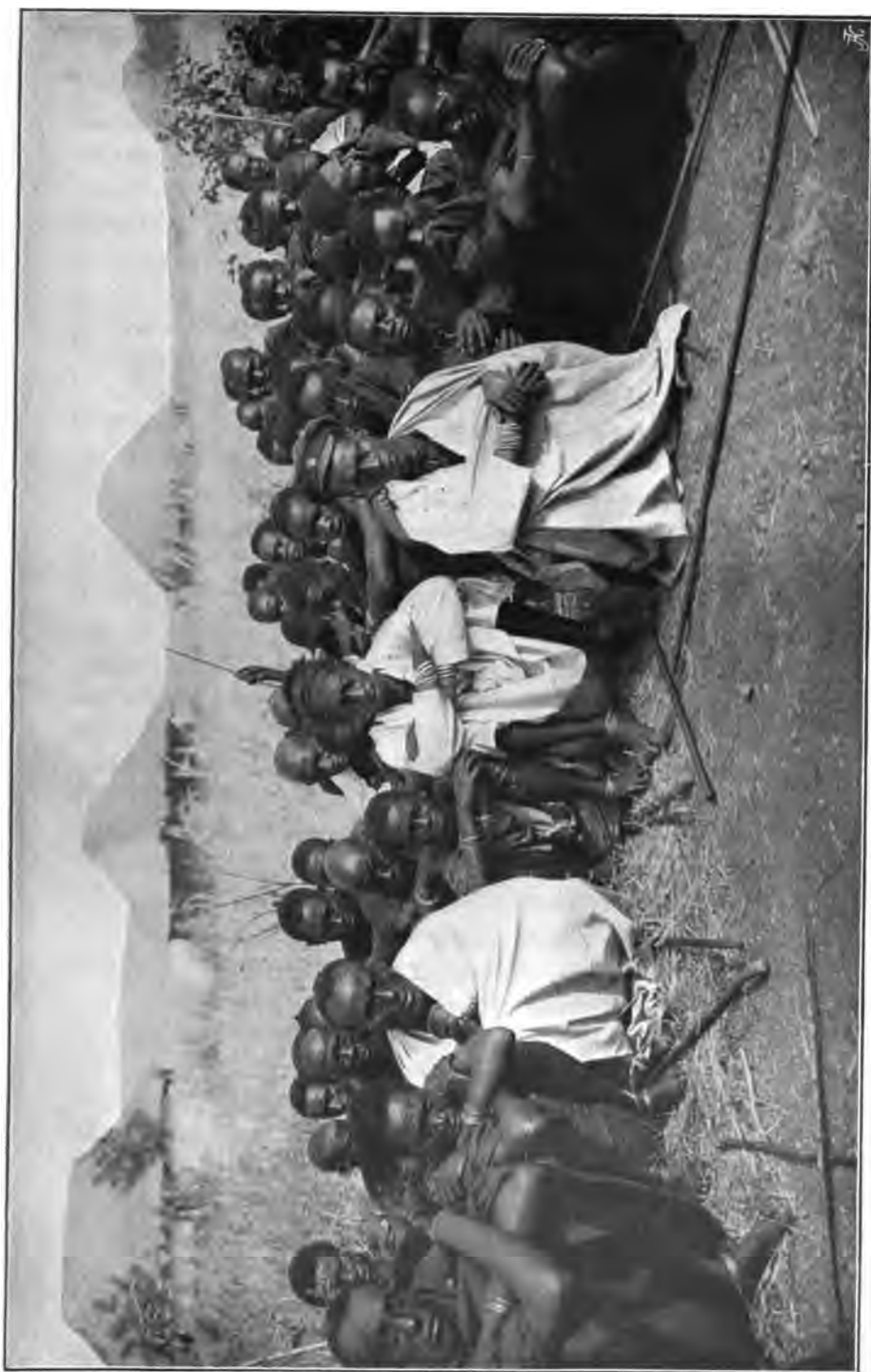
This lack of a connecting line of communication once landed Lieutenant Weiss and Kirschstein in a highly critical position. They had crossed the Kagera at the Kanjonsa ferry in one and a half days in a folding boat, and were journeying southwards for survey purposes. Weiss in reporting the episode wrote:

"I was assisted in my signal constructing and topography by Lieutenant von Wiese. In order that we might work together, Wiese and I had arranged to meet near the Kakitumbe at a point where we had determined to construct the new signal station at

Mount Mpungu. Kirschstein remained behind in order to proceed with his geological investigations at Mount Oregero. As, however, we only sported one cook between the two of us, and as I hoped to reach von Wiese's hospitable quarters the same evening, the cook and his kitchen remained behind with Kirschstein. After an eight hours' march, during which I stopped occasionally for an hour or more to take observations, I reached the Kakitumbe opposite Mount Mpungu. Here I commenced a fruitless search for Wiese, but neither the alarm shots of my Askari nor the ascending fireballs brought any return signal.

"Utterly exhausted and incapable of continuing the march, I encamped with my thirty men. It was ten o'clock at night. In fond expectation of Wiese's flesh-pots, I had eaten nothing since midday. Endeavouring to appease my grumbling interior with a final cigar and a cognac, I wrapped myself in a blanket and fell asleep. Early next morning, before daybreak, we were up and off again. First we had to cross the Kakitumbe over a peculiar bridge; the natives had felled the biggest tree growing on the banks in such a manner that it lay across the water with its crown on the further side. Surely one needed the agile shoeless feet of a nigger in order to pass safely over the narrow bridge, bearing fifty or sixty pounds' weight on one's head!

"Arrived at Mount Mpungu, I found a newly constructed trigonometrical signal, but, alas! no living beings. In vain I searched for a note of some sort bearing on the absence of the amiable constructor. In the meantime the noonday hour had crept along. I took all the required measurements from the mountain top. As I considered a further search for Wiese to be hopeless, I was on the point of marching back to Oregero, when my men directed my attention to a few dark specks on the boundless expanse of straw-yellow grass steppe. By the aid of my Voigtländ glass I was soon able to make out an Askari patrol, who, upon our firing an alarm shot, crossed over to us. The men had been hunting three days for me with a letter from Wiese. I learnt his whereabouts from them; he had proceeded further south, and camped with the Sultan Katreia. I immediately



THE SULTAN KATREIA

started off, and came up with him shortly before six o'clock in the evening, tired out and hungry, whilst my fagged-out carriers did not straggle in before eleven o'clock the same night."

As the time I could allow for the surveying of the "White Spot"—a territory of nearly 2,000 square kilometres—was a comparatively short one, the two lieutenants had to work at a fairly quick rate. In consequence of this, and particularly whilst they were in the deeply fissured mountain country of the Kagera district, the commissariat caravans were at times unable to discover their camp. Thus they were compelled every now and then to put themselves, as well as their people, on half or one-third rations.

At Mount Ndama the position was a particularly critical one. The following is a report that I received at that time from Weiss :

"Eight days earlier we had sent off express messengers begging for fresh stores, but no answer had been vouchsafed. Our people's stock of vegetable food had been entirely consumed, and we had already subsisted for two days solely on meat. As far as the eye could see no habitation could be descried. Night after night we lighted blazing piles of wood and fired off the last of our stock of fire-balls to indicate the position of our camp to any commissariat caravan which might possibly be searching for us. But we never got an answer. As it was simply impossible to hold out any longer under such conditions, we decided, with the greatest reluctance, to abandon our interesting labours and to proceed to the next village.

"After journeying for about one and a half hours we suddenly became aware of the head of an Askari gazing down from a height. A moment later his whole body was visible. He was followed by twenty carriers bearing the welcome provision loads. We greeted them with wild cheers, our men setting up an ear-deafening Babel of joyful cries. Our immediate troubles were over, and we were enabled to carry on our work buoyed up with fresh courage and strength. This commissariat caravan had been wandering about the district for five days looking for us.

During the last two nights our signals had been heard, and the caravan had found us in our hour of need."

Meanwhile Wintgens, Schubotz and I had utilised the time of our stay opposite Mount Ndama, and the weeks occupied by Kirschstein and Weiss in their work, to investigate the unexplored region from all quarters. On one occasion this led us in a south-easterly direction, almost to northern Kissaka. We noticed everywhere immense herds of game, which, as usual, consisted mainly of zebras, elands, lyre-antelopes, and reed-bucks. Equine antelopes were only visible during one excursion to the south-east. Lions were enormously abundant, more so than in any other portion of German territory. The only district in which we encountered similar conditions was in the Congo State at the south end of Lake Albert Edward. I might here relate one of our experiences:

Wintgens and I returned to the tent one noonday after a successful excursion, hungry and ready for a well-earned meal. Suddenly our zoologist rushed in with news of a troop of six lions, seen whilst he was returning to camp. During the pursuit the animals, almost invisible amongst the tall grass, permitted him at intervals to approach within a few steps and then fled roaring. As the high grass completely covered the beasts, he was only able to get in a shot at the head of one of the males. The lions then trotted away, and, keeping up a steady pursuit, he saw them disappear in a thicket of dense acanthus.

His story at first excited our incredulity. His imagination appeared to have been strongly stimulated by reports from our followers, who, as is well known, are fond of "living up to" and anticipating their master's wishes. As, however, our hunting instincts were roused by the story, we decided upon driving the scrub. Eighty carriers, on whose faces doubt and disbelief were plainly visible, started immediately, and, accompanied by five Askari, arrived at the thicket in question. We sent off the bearers to the opposite side of the acanthus, a distance of some three hundred metres away, to act as a screen, and posted the Askari on the wings. All our followers were ordered to shout and yell,

and then to fire the dry steppe grass. We hoped in this way, and by means of the dense clouds of smoke, to drive the lions from their lurking place.

Then we three Europeans took up our posts, mine being at the southern end of the thicket near the upper end of the gorge. The zoologist and Wintgens stationed themselves lower down. Sitting on my hunting stool, an Askari ready with a reserve rifle behind me, I waited for events, which I hardly believed would happen. Suddenly, however, I noticed a commotion along the line of bearers, and with the aid of my glasses I perceived that the Askari were shouting and endeavouring to head the wings of the bearer line. I gripped the butt end of my rifle tighter, and, to my indescribable amazement, I observed first one maned head, then a second, and later three more heads of lions emerging from the tall grass close below my position. Unfortunately the height of the grass allowed me to see hardly anything of the bodies of the animals, so that I could scarcely count on the success of any shot. But remembering from experience, particularly applicable in Africa, that not to shoot means failure, I let go at the head of the first one and—missed; also a second and a third time. Then I took refuge in the only right rule for lion shooting: shoot and run as long as you have any breath, for any correct and methodical stalking of these creatures is out of the question. One usually succeeds without cover and with good wind in drawing near to a trotting lion, as he does not keep a very good look out when on the move. I calculated upon this. With rifle in hand I beat a way for myself through the breast-high grass as rapidly as I could down into the gorge, shaking off the Askari, who in his fear tried to hold me back. "*Simana bana, simba wengi*" ("Stay here, master; there's a crowd of lions"), he kept repeating. But I would not be diverted from my purpose, for I could only reckon upon success if I crept somewhere close up.

Just as I reached the bottom of the valley the animals wheeled and fled up the opposite slope about three hundred metres distant from my position. I sighted high and fired. The physical and mental excitement, however, was too great. Another miss!

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Through the valley we rushed, hindered and hampered at every step by the tall grass. Half-way up the slope I at last caught a clear view of two of the creatures. At a distance of 150 paces one bullet found its mark in the body of a medium-sized male lion, as one could perceive by the lashing of its tail and by that peculiar deep growling which no one who has once heard ever forgets. Following on the shot we found blood marks, and continued the chase with our guns ready and cocked. Anyone who has ever tracked a wounded lion through the tall grass into the dense scrub knows that creepy sensation of suspense that gradually steals upon one as he penetrates deeper and deeper with rifle at the ready, awaiting an attack at any moment. My nerves, however, were not exposed to too great an ordeal, for whilst following up the bloody trail one of my Askari suddenly saw the lion's tawny hide gleaming through the grass. Turning to me he said: "*Kaputi*, * *bana*."

I have often found that when dying a lion utters cries which are difficult to describe; I can only say that they sound like dolorous lamentations. On hearing these Dr. Schubotz, who had followed us, rushed up and shook me by the hand, congratulating me. We were regarding the fine creature when one of the boys, Almas, stretched out his hands crying: "See, master, still two more." As a matter of fact, two lionesses were pacing to and fro on the top of a hill some distance off. I immediately left a watch to guard the dead lion, and ran towards the fugitives. The exertion was tremendous, for innumerable summits had to be surmounted, and in places the grass reached up to our breasts. Pulses leaped high and hearts beat to bursting, whilst the perspiration literally poured in streams from our bodies. Yet we were ready for anything rather than lose such game! Better be dead than abandon the pursuit, as long as we had the slightest hope of success. But in spite of every effort the distance between us grew ever greater, and so at length I resigned the spoil to Schubotz, and returned to skin my dead lion.

I had hardly reached the spot when a youth came rushing up

* *Kaputi*, "done for," a favourite expression for dead.



**LION SHOT BY THE AUTHOR, JULY 19, 1907, ON THE BANKS OF THE
KAKITUMBE**



WANJAMBO HUT ON THE KAGERA

crying: "Five other lions have just passed by." My rising doubts were instantly quelled, for ten hands pointed simultaneously to a gentle declivity in the direction of the acanthus thicket, and I actually saw the heads of two lions emerging from the grass. Ordering an Askari to go on skinning, I made ready for a fresh pursuit. A wild hunt commenced, the lion always trotting in front and I following rapidly. Thus one quarter of an hour followed the other. My strength became exhausted, and I was about to abandon my efforts when, two hundred paces distant, I saw another half-grown beast looking round ferociously at me. Although I was in such a breathless condition that I could scarcely hold the rifle steady, I managed to let him have a bullet. Drawing himself up and lashing with his tail, he fled, snarling irascibly, into the acanthus scrub. With him were two females.

The two other lionesses had separated. I decided to make an attempt to overtake them. After following the tracks for two hours, during which time I occasionally caught glimpses of them, I saw them both exposed on the distant summit of the hill gazing down towards me—a picture which Kuhnert knows so excellently how to portray. The sharply defined outlines of the beasts were set in strong relief; two dark silhouettes against the deep red background of the evening sky. Summoning up all my self-possession, I took careful aim and fired. The nearest lioness fell, and vanished reeling in the grass. I fired again, and the second bullet likewise found its mark. We found the first beast lying dead in the bush a few feet away, but the approaching darkness forbade a search for the other, who was not seen again.

We now returned with our booty to where we had left the first lion I had killed. There we met Schubotz and Wintgens in the same exuberant frame of mind as I was. After some futile attempts Wintgens had finally succeeded with a master shot in stretching out a lioness whilst she was bounding across a burnt-out patch of ground. Schubotz had not managed to get another shot. Even though results might have been greater, we were in high spirits in camp that evening; and more than one of the

bottles of champagne we had taken with us for sickness, or other cases of emergency, did duty in celebrating the occasion.

On the 13th of July we again decided to make a day's excursion towards the east, if possible as far as the Kagera. We set off at sunrise with twenty carriers, crossing the Kalangassa and passing the northern slope of Mount Ndama. The farther we proceeded eastward the more hilly and picturesque the country became with its herds of elands, *jimāra* (lyre-antelopes), and zebras. The steppe is chiefly covered with the umbrella palm, which grows in shady clumps. At one of these latter, on a slope near the summit, we saw a troop of equine antelopes browsing.

We had decidedly underrated the distance to the Kagera. Then, too, we had deviated somewhat south-east in consequence of the various hill-tops which had stood in our path. As it was late in the afternoon, we were compelled to return to camp. We arrived there considerably after nightfall, having been away fourteen hours.

On the next day we struck camp and journeyed farther south. A fresh division of loads gave us no small amount of trouble, our greatly increased zoological assortment necessitating a much larger number of carriers. We were in an awkward dilemma with regard to this when, to our great good fortune, one of our commissariat caravans from an inhabited district west of the Kakitumbe hove in sight.

Whilst on the march we came across one of the commissariat trains from Lake Mohasi which had been commissioned for Weiss, and we then received our first German mail. It included our first authentic news of Weiss, as well as of Wiese, whose camp had been passed by this caravan, which had orders to proceed to the Kagera, south of Mount Oregero. In a few lines Weiss and Kirschstein were informed of our movements.

Our new camp lay close beside a papyrus swamp, which extended far away to the south, and was a real El Dorado for buffaloes. Perfectly unknown to man, it was bound to afford us some zoological surprises.

Like all explorers, we had naturally set our ambition upon

bringing home as complete a set of collections as the time would allow. Knowing, too, the ideas held by Professor Matschie, of the Berlin Zoological Museum, for the propagation of the buffalo, I particularly desired to try and fill up any gaps that existed in the series of his observations. For five days I hunted the buffalo untiringly, but all my efforts to bag one were vain. I often nearly came up with a herd, but some slight, unavoidable noise, such as the breaking of a papyrus stalk or a sudden puff of wind, would ruin the attempt. To secure my end I often sacrificed my night's rest, watching in glorious moonshine. I would leave the camp, and attempt to stalk the buffaloes until after midnight in an inhospitable, desolate, and most inconceivably trying tract of country. Many a time I have heard buffaloes all round me passing through the papyrus, and with my rifle ready I have waited for their appearance at one of the many clearings. All in vain! I did not manage to get in a single shot, and turned back to camp terribly disappointed and horribly stung by mosquitoes. On one occasion a characteristic short, sharp growl from a leopard riveted my attention, but in spite of the clear moonlight I could not sight him. I returned to the swamp again, accompanied by the faithful Ombascha Mtoni, my companion of the Masai steppe in 1905. All the others remained behind. On joining them again, empty handed, they showed me the fresh tracks of two lions which had come within rifle range but had vanished at their shouts. The last straw!

The 23rd of July brought us further correspondence. Weiss sent a letter dated from Oregero begging for provisions. I also received a letter from Captain von Grawert, the Ruanda Resident, inviting me to visit the palace of Sultan Msinga of Ruanda on our march from Mohasi to Lake Kiwu; he proposed to await us there, where great preparations for our arrival were already being made. Then a report had to be sent to Leipzig, which occupied nearly the rest of the day.

By this time our commissariat supplies were dwindling to such an alarming extent that we could not think of remaining any longer where we were if we desired to avoid serious trouble.

So we agreed to start away for Mohasi. Schubotz, who was making a systematic investigation of the swamp fauna, separated from us to strike a bee-line for the lake. Thus I remained alone with Wintgens and Weidemann. The latter fell in, unarmed, with a fine bull buffalo whilst returning from dismounting our magnesium light apparatus. As his rifle bearer was some distance away, the much-coveted prize was again lost.

Everything seemed to have conspired against us whilst in this neighbourhood. Wintgens also had good reason to complain of his luck. He tried the buffalo swamp, and had the good fortune at early dawn to encounter a group of buffaloes in one of the clearings. Getting within gunshot, he aimed at the head of one of them, a fine bull who was gazing straight towards him, and the shot told, for he fell to the ground.

As the herd broke frantically away he sent a second shot after a cow buffalo. For some minutes he listened to the crackling of the papyrus stalks made by the fugitives. Then all was still. Wintgens rushed up joyfully to the spot where the creature had fallen, but his face grew abnormally long when he found—nothing! The bullet had doubtless struck against the tough horns of the buffalo and stunned it momentarily. *Voilà tout!* The search for the wounded female also proved fruitless.

The country grew more inhabited the farther we pushed on to the south. Isolated, fine lithe figures of the Watussi, belonging to the Ruanda potentate, were encountered. On the bare, parched hill summits and on the long ridges we could see small hamlets surrounded by milk-weed palisades. The inhabitants were of an affable disposition, and if approached in a kindly manner were very willing to render us any assistance we stood in need of. Corresponding with the altitude we often found the temperature very cold, and in the evening, when in the open, were only too glad to don European overcoats.

Early on the 27th, at five in the morning, we started from Lake Russenje. At first the road winds through inhabited districts till it merges into the broad grass steppe, which is only sparsely covered with umbrella acacia. A great many herds of lyre-



WAKONDJO CICATRISATIONS



CICATRISATIONS ON A MKONDJO WOMAN

antelopes, swala, zebras, reed-buck, and dwarf antelopes were to be seen. At last we found meat again in plenty for our followers, a circumstance which raised all our spirits. On arriving at Mount Lubona we pitched our camp.

After the long stretching heights of East Ruanda had been passed early on the 28th of July, the narrow mirror of Lake Mohasi, which, according to the information given us by the natives, we had not expected to reach before the following day, suddenly burst into view. Wiese's camp was supposed to be very near, and, as a matter of fact, an hour later we were shaking hands with him, after a separation of three weeks. He was no less surprised than we were, and he was also very glad, as he had been awaiting our arrival for fourteen days, after completing the road survey from the Kakitumbe up to the spot. He had pitched his quarters under the shade of a mighty pine tree growing on the banks of the lake, and here a whole colony of herons had settled, quite indifferent to the doings in the camp below them. Wiese utilised his stay to get together a fine collection of all sorts of tattooings and of very interesting ornamental skin markings, which he supplemented on his way to the Congo.

The study of the tattooings and skin markings found in the whole of Central Africa is an extremely remarkable one. It demands very great diligence and very special and detailed investigation to trace the origin and significance of the custom. For instance, Wiese found patterns which constantly recurred, but were frequently accompanied by changing side-marks amongst the hundreds which he copied. According to the statements of the natives they betokened signs of lineage by which the various races recognised their own folk. The ornamental scarrings which are to be found more particularly on the bodies of the inhabitants of the Lake Albert Edward region and the whole of the Congo basin are brought about by an inflammation or artificial irritation of the skin, which is scratched or incised with a knife, according to the pattern desired. The wounds thus made appear to be smeared over with all kinds of vegetable matter and dirt, of which soot is a conspicuous feature,

and causes them to swell up, frequently to an extraordinary extent. We saw skin puffings on the foreheads of the Bangala, the chief race of the middle Congo territory, swollen up to about two centimetres. Countless variations may be found, among which the half-moon shape occurs most frequently.

An immense mail was waiting for me, so that Wiese and I found our hands very full. First of all fresh plans had to be discussed. To Weiss and Kirschstein, who were once again in company, was forwarded detailed information as to our intentions and the road to be followed. To West Mohasi was sent tidings of our arrival. A letter from Captain von Grawert was sent on to Niansa, and soon the Askari postmen-patrols were flying about in all directions. We remained two full days in our tents busied with clerical work. The nomads had turned into settlers.

Wintgens having set out the day before for the west end of the lake, Wiese and I followed on the 30th. At first we journeyed over fairly easy paths leading alongside hills or across them; now and again we were afforded a view of that long, narrow mirror, Lake Mohasi. Then the way lost itself in deep ravines or over high summits, which tried the powers of the load carriers most heavily. Several watercourses passed on the way offered refreshing draughts to our exhausted men. We descended at an early stage from the backs of our mules, which constantly touched the ground with their knees in the steep ascents. Many of the carriers, too, lost control of their powers; some threw down their loads and sank exhausted to the ground. In addition, Lieutenant von Wiese's health during the past few days had not been all that could be desired. The consequences of a heavy cold, accompanied by feverish symptoms, now made themselves felt, so that the poor fellow suffered severely. This state of affairs continued for two days through a fairly well populated country until, at a sharp bend of the road, the mirror of the lake suddenly became visible. Immediately afterwards we sighted the camp, which was in a state of some commotion at the news of our arrival.

Everyone had kept in good health with the exception of Dr. von Raven, who had suffered from a relapse of fever. Greatly to my relief, however, I heard that he had so far recovered that, a few days before, he had been able to make a little trip to northern Kissaka.

Schubotz was not altogether so satisfied with the results of research in Lake Mohasi as he had perhaps expected to be. Apart from an abundance of the microscopic organisms known as plankton, the lake had furnished but little noteworthy material. I will give a short extract or two from Schubotz's own account of his investigations as well as from a report by Dr. Mildbraed, who writes rather more contentedly:

"The west end of Lake Mohasi terminates in a papyrus swamp, and therefore promised rich spoils for zoological treasure-hunters. We were all the more keenly disillusioned to find the fauna far more meagre in character in this great water basin—the first we had explored in Africa—than we had been led to suppose in Germany. In spite of the luxurious vegetation at this part of the lake, the most diligent search was needed before we found a few sponges and polypi attached to some characeous plants. Our dredging experiments, too, which were beset with difficulties in consequence of the inadequate craft, led to sparse results—a scanty show of mussels and snails—in comparison with the pains taken. In pursuing these investigations we* glided out on to the lake in our little folding boat, threw the dredge into the water, and, summoning all our efforts together, drew it to land.

"On the other hand, the search for plankton, instituted at different spots of the lake, and conducted at different depths, yielded rich material, composed in the main of diminutive crustacea (copepoda and cladocera). The rotatoria were less numerous.

"Crocodiles are not found in Lake Mohasi, nor in any other lake in Ruanda. Had we believed the natives, we should have thought the same about hippopotami, but we were undeceived in

* I frequently accompanied Schubotz on these excursions.

this respect by a very fine specimen of the latter popping up out of the water one day in close vicinity to our folding boat.

"The scarcity of any large species of fish in the lake was conspicuous. We were only able to capture barbel a few inches in length and some specimens of cichlidæ, and in the stomachs of the otters—which were very plentiful here—we found the remains of small fish only. Consonant with this fact it may be stated here that no fishing is carried on by any of the inhabitants of the surrounding country.

"We found the ornithology of the western end of the lake very rich in species. The lake and its banks and the floating islets of reed masses were animated by swarms of ducks, geese, snake-birds (or darters), water-hens, water-rails and lapwings."

And Mildbraed goes on: "Generally speaking, the papyrus swamps are poor in species, but the western part of Lake Mohasi harbours very rich flora. In almost all respects it corresponds to the other valleys of the district; it is, so to speak, the submerged lower part of a valley which has no outlet, and is gradually drying up in the west. The chief vegetable growths are the papyrus and prickly marsh rush (*Cladium mariscus*), which is also to be met with in Germany, and which forms immense sedge banks. The numerous floating islets consist entirely of these growths, which are easily pushed aside by a boat. Two shrubs of the willow family luxuriate on these islets, and have been named the *Myrica Kandtiana* Engl., in honour of their discoverer, Dr. Kandt. Strangely enough, a species of *fiscus* (*F. præruptorum* Hiern var. *ruandensis* Mildbr.) also grows there, for it is probably the sole specimen of this large African family to be met with in true swamp formation.

"The open water bears two specimens of water lily, both recognised as fresh discoveries—the *Nymphæa Mildbrædii* Gilg., and *N. magnifica* Gilg.; they form a splendid adornment to the lake, with their blossoms merging into all shades, from rose-red to blue, and their beautiful large floating leaves.

"Then come the wood-ferns found in the sedge-banks, also some other growths, too numerous to mention individually, which



THE MARSHY WESTERN END OF LAKE MOHASI



A MHUTU BRECTING A GRANARY

are disseminated in many species of water-plants such as *Potamogeton* (pond-weed) and *Ceratophyllum* (hornwort), which flourish in exactly similar form in European waters."

Several times a red-brown species of marsh antelope was to be seen on the floating islets, and Czeczotka was lucky enough to secure one with his rifle.

We had reason up to this time to be very fairly contented with the sum total of our labours. Although, no doubt, the mapping and surveying and geological investigation of the regions we had wandered through were not quite perfected, yet they were getting near to their finish. Immense quantities of the most diverse collections covered the ground all round the encampment, and the second batch of six hundred loads of scientific material that we had collected was sent away home from Mohasi.

We ourselves wandered away westward to visit Ruanda, intending then to proceed to Lake Kiwu. A new stage of work lay before us.

CHAPTER IV

THROUGH RUANDA TO LAKE KIWU

THE month of August found us in Ruanda, that land of fable which we had been longing to see.

Ruanda is certainly the most interesting country in the German East African Protectorate—in fact, in all Central Africa—chiefly on account of its ethnographical and geographical position. Its interest is further increased by the fact that it is one of the last negro kingdoms governed autocratically by a sovereign sultan, for German supremacy is only recognised to a very limited extent. Added to this, it is a land flowing with milk and honey, where the breeding of cattle and bee-culture flourish, and the cultivated soil bears rich crops of fruit. A hilly country, thickly populated, full of beautiful scenery, and possessing a climate incomparably fresh and healthy; a land of great fertility, with watercourses which might be termed perennial streams; a land which offers the brightest of prospects to the white settler.

For our first knowledge of Ruanda our thanks are due to the report of Count von Götzen, the former Governor of German East Africa and the present German Ambassador to the State of Hamburg. Since 1894, when Count von Götzen passed through this territory, *en route* to Kiwu, its conditions had apparently changed very little. The hostile attitude adopted by the inhabitants at that period has, however, given place to a more friendly one, a condition of things due to the increasing European influence. Later on we gained further information concerning this wonderful country through Dr. Kandt, who has narrated his experiences in that admirably written work "Caput Nili."

Kandt is well known as one of the greatest authorities on



A MTUSSI

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Ruanda. Two small properties, Kagera, on the Mashiga, and Bergfrieden, at the southern end of Lake Kiwu, bear witness to his enthusiasm for this strip of territory. With his name that of Captain Grawert may well and worthily be mentioned, the latter having represented the Residency for ten years, until the separation of Urundi and Ruanda made a new administration necessary. Grawert filled his difficult post with diplomatic adroitness and great circumspection, and he had a masterly way of bringing the natives—who at first were somewhat refractory—under the control of the German Government.

Ruanda is doubtless, with the exception of Urundi, the last Sultanate or "Kingdom" in Central Africa which is governed to-day, as in centuries gone by, by a prince clothed with absolute and illimitable powers. There is only one ruler, and no rival sultans are allowed.

The administration in Ruanda differs in many important respects from that of the Bukoba province. It has been seen that in Bukoba there are a large number of sultans who enjoy, more or less, equal rights and privileges. The greatest possible centralisation is aimed at, for it is naturally easier to control and keep in hand the fewer number of sultans (known in the Bukoba province as "*Mukama*" [prince]); the Resident stationed there has consequently made it his object gradually to decrease their number, either by breaking the succession or by compounding with them. The existing sultans bow willingly to the supremacy of the Government, and even upon trifling matters often ask for a ruling from the Resident. All the personal concerns of the sultans pass through his hands. The administration of justice in ordinary matters is in the hands of the sultans, but sentences of death and other heavy penalties are inflicted by the Resident, who at the same time has the power to intervene in smaller matters.

There are many interesting points of difference between Ruanda and Urundi, but at present we shall deal only with the former province. There, nearly a century after the foundation of Bukoba, many far more thickly populated and less explored

districts existed that were under the dominion of one sultan, the ruler over some one and a half million people. To anyone with an intimate knowledge of African affairs it seemed a sheer impossibility that so powerful a sovereign would voluntarily submit to the new *régime*, and agree to enter upon no undertakings within his vast realms except by permission of the European Resident. To compel him to do so would have meant bloody wars and an enormous sacrifice of human life as the inevitable consequence. The sudden change of existing conditions, too, would have involved a heavy pecuniary sacrifice, as the Government would have found it necessary, with such a large population, to appoint a relatively large number of European officials. As such measures would have proved impracticable, complete anarchy would have followed. So the country was therefore allowed to retain its traditional organisation, and the Sultan was given full jurisdiction over his fellow-people under control of the Resident, who was to suppress cruelty as far as possible. In one word, the Government does not acknowledge the Sultan as a sovereign lord, but fully recognises his authority as chief of his clan. Kindred tribes, non-resident in Ruanda, are therefore not subject to the Sultan's jurisdiction, but are under the administration of the Resident.

The fundamental principle is the same with all Residents. It is desired to strengthen and enrich the Sultan and persons in authority, and to increase thereby their interest in the continuance of German rule, so that the desire for revolt shall die away, as the consequence of a rebellion would be a dwindling of their revenues. At the same time, by steadily controlling and directing the Sultan and using his powers, civilising influences would be introduced. Thus by degrees, and almost imperceptibly to the people and to the Sultan himself, he eventually becomes nothing less than the executive instrument of the Resident.

This may explain the apparent breach of the rule so readily quoted—*divide et impera*; only apparent, for both Resident and Sultan play off the subordinate chiefs one against the other, and retain all the privileges which a strong centralisation gives them.



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It explains, also, what to the uninitiated appears to be an error—why the Resident in his own interests often lends his support to the Sultan against subordinate chiefs, instead of assisting the latter to rebel against him.

Another circumstance which tends to facilitate the task of the Bukoba Resident is that the European power and the advantage of friendly relations with Europeans is illustrated daily to the natives by means of the steamer traffic on the lake, and by the impetus given to trade and agriculture by the opening of the Uganda railway. In Ruanda it will not be possible to reckon upon assistance from any such impressions for some time yet.

The people hold their "Mami"—which is the official title of the Sultan—in the greatest awe and reverence. It is extremely rare for anyone to venture to thwart his will, for the Sultan is the owner of the land and all the stock, oxen, calves, goats, pigs, etc. The people certainly enjoy the use of them, but the Sultan retains the power of demanding at his pleasure the return of his property from his subjects.

The population is divided into three classes—the Watussi, the Wahutu, and a pygmy tribe, the Batwa, who dwell chiefly in the bamboo forests of Bugoie, the swamps of Lake Bolero, and on the island of Kwidschwi on Lake Kiwu.

The primitive inhabitants are the Wahutu, an agricultural Bantu tribe, who, one might say, look after the digging and tilling and agricultural economy of the country in general. They are a medium-sized type of people, whose ungainly figures betoken hard toil, and who patiently bow themselves in abject bondage to the later arrived yet ruling race, the Watussi.

The immigration of the Watussi is, without doubt, connected with the great tribal movement which brought the Masai race to East Africa. The same arguments which have led observers to believe that the Masai came from the north and from Egypt, or perhaps even from Arabia, may also hold good in the case of the Watussi. As a matter of fact, many features common to both races may be discerned. The Watussi are a tall, well-made

people with an almost ideal physique. Heights of 1.80, 2.00, and even 2.20 metres (from 5 ft. 11½ in. to 7 ft. 2½ in.) are of quite common occurrence, yet the perfect proportion of their bodies is in no wise detracted from. Whilst the shoulders are generally powerfully built, the waist is at times extraordinarily slender. The hands are elegant and delicate in form, the wrists of an almost feminine grace. They possess that same graceful indolence in their gait which is peculiar to Oriental peoples, and their bronze-brown skin reminds one of the inhabitants of the more hilly parts of northern Africa. Their heads are eminently characteristic. Unmistakable evidences of a foreign strain are betrayed in their high foreheads, the curve of their nostrils, and the fine oval shape of their faces.

The affairs of the country are administered by a number of subordinate chiefs (*Watuales*), also *Watussi* or *Wahima*, who are superintendents of districts, yet are always subject to the supreme control of the ruler, who springs from the old *Watussi* race, the Bega.* Frequent interviews with the "Mami" necessitate many journeys to his residence, and it seems that at such times great quantities of *nsoga* have to be consumed, to facilitate the unravelling of awkward problems and to determine the measures to be taken. This is a brew concocted from bananas with malted red sorghum (Chinese sugar-cane), and manufactured at Kinjaruanda. The Sultan's court is at such times often the scene of wild orgies, tumult and beating of drums, which on occasion continue all night.

Similarly to their sovereign ruler, the *Watuales* are descended from various distinguished families or clans. These clans hold land, pay taxes to the Sultan, are keen to avenge the bloodshed of kinsmen, and possess a totem, some object of adoration which usually takes the shape of an animal or a plant.

The vendetta, according to Czekanowski, is the real bond of union which cements these clans. If it did not exist they would collapse. In districts where these clans intermingle, and the members of any special family cannot congregate without quarrel-

* It may be mentioned that there is a Bedja race existent in Nubia.

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ling, the avenging of blood has usually to be carried out by secret murder. In those districts, however, where the clans live apart with their chieftain, it often assumes the character of a war. From Czekanowski's investigations it would appear that a certain number of clans unite together and form a tribal race possessing one common name and characterised by one common language, in which, however, the feeling of a general community of interests is exhibited in very varying degree. Thus, for instance, whilst Czekanowski later on found this feeling to exist very strongly amongst the Azande, other races, such as the Bakumu-Babira, were hardly sensible of their bonds of union. Czekanowski affirms that the number of clans of which a race is composed varies from twelve (like the Bakondjo) to seventy (as amongst the Banjoro, who are nearly related to the Wanjaruanda).

As already mentioned, every clan reveres a totem, which in Kinjoro is called *umusimu*. Should the totem take the form of an animal, it is forbidden to kill or to eat such animals. This interdiction is called *umusiru*. It is closely connected with the widespread belief of transmigration of souls, for their creed teaches that the spirits of departed relatives enter the body of their object of adoration. The uncertainty obtaining as to which special totem the spirit of the deceased has entered makes it appear more prudent to the natives to abstain from slaying or eating any animals revered as totems. And doubtless this consideration gave rise to the prohibition.

In Ruanda the souls of the deceased rulers are believed to dwell in the leopard and to continue to torment their people in that shape.

The following are a few clans of the Wanjaruanda, with their totems:

The most widely distributed and most feared of the clans is that of the Bega; they have taken the toad as their *umusimu*. Another, the Wanjiginga, reveres the crested crane; the Bagessera worship the wagtail, or dish-washer. Farther away there is the clan of the Wankono, whose totems, I understand, are sheep and

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goats. The *umusimu* of the Bakora is the chameleon; the Wasinga's sacred object is a particular species of ox with a dirty-brown patterned hide; that of the Batwa, in the Bugoie forests, is the man-ape, and so on.

The high degree of civilisation existing among the Watussi is assisted by climatic conditions. These are nearly ideal for an equatorial country. Intense heat is excluded by virtue of an average altitude of some 1,600 metres. The temperature prevailing generally is something like that of a warm summer day in Germany. It is refreshingly cool in the mornings and evenings, which is conducive to healthy sleep. As the malaria-carrying mosquito (*Anopheles*) does not exist in this district, such a thing as an outbreak of fever is of rare occurrence. It is true that isolated malaria parasites are found in the blood of Ruanda natives, but these have doubtless been imported from less healthy regions where the *Anopheles* is an acknowledged pest. According to Raven's researches, cases of malaria in Ruanda are insignificantly few in proportion to the density of the population. The tsetse-fly, so destructive to man and beast, is non-existent, and this fact has, so far, protected the territory from the ravaging sleeping-sickness which, as is well known, is disseminated by the tsetse-fly (*glossina palpalis*).

The Watussi make the best uses of their very favourable climatic conditions. The country possesses a fabulous amount of wealth in its herds, to the breeding of which this pastoral people are particularly devoted. Day after day immense herds of broad-horned oxen and small stock of all kinds may be seen grazing on the mountain slopes, for whom provision is made by continually burning away the dried-up grass. The young grass which shoots up from these burnt-out tracts forms a special delicacy. Stock-raising and the productivity of the country are greatly aided by the extraordinary number of small watercourses, which never run dry, even in the dry season.

From what I have written it will easily be seen that the greater part of Ruanda is eminently adapted for colonisation by white men, and that cattle-raising on a large scale, and also agricul-

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ture, may be carried on in a remunerative way, for the quality of the cattle itself is as excellent as that of the milk they yield. As to the quality of the soil, it simply leaves nothing to be desired, so that it is evident that there is a splendid opening here for the establishment of business on a vast scale. The entire region, however, is one which is quite unknown to the German Government, and so it would be a very desirable thing if the State would decide upon sending out a commission, composed of agricultural experts, to examine into the conditions that exist. It would be necessary that an experienced forestry expert should be of their number, as the woods and forests question is an important one in Ruanda.

Ruanda, in conjunction with Urandi, is the most thickly peopled region of Central Africa. Its population has been estimated at one and a half millions. The great area of forest-land has, however, been encroached upon by the increasing population so as to provide sufficient space and pasturage for the cattle-rearing Watussi and for the agricultural activities of the Wahutu. At the present day Ruanda possesses only two large tracts of forest on its boundaries: that of Rugege, to the south-east of Lake Kiwu, and the Bugoie forest country, which stretches from the northern end of the lake eastwards. The remnants of ancient forests may be seen here and there on mountain tops, and as these groves are regarded as sacred, they are, therefore, carefully maintained. They evidently mark the abodes of ancient tribal chiefs. The finest specimens of *figus* are chiefly met with at these spots. Smaller groups of *Acacia Abyssinica*—which, however, are very rare—may, says Mildbraed, be regarded as remains of pristine vegetation. The great central portion of the country is entirely bare of trees. The question of fuel being one of the most important, as regards colonisation, this matter should be inquired into at once. Time should be seized by the forelock, and a judicious afforestation undertaken of those parts which most require it. For there is no doubt that we should not rest content with the railway systems already established at Lake Victoria; the gleaming rails must be pushed still farther ahead, so as to

ensure that we are not robbed of those rich territories lying westward of the lake.

On the 14th of August we set out from Lake Mohasi towards the west, our road leading us at first through the swampy end of the lake. To accomplish the passage a huge quantity of papyrus stalks were cut and placed in layers. On this swaying but reliable foundation even the mules were able to pass across safely. Then the usual load-humping recommenced, which was a painful and laborious business at first for our carriers after their lengthy rest.

Near the village of Katschuri, on a hill overlooking the surrounding country, there stood a mighty tree whose colossal crown of foliage seemed to invite us to a shady resting-place. Some beehives peeped out here and there between the branches, full of a promise of sweet gifts. The place seemed made for us, so we were soon lying at our ease beneath the tree's friendly shade in full anticipation of a pleasant rest after our fatigues, whilst the Askari set about pitching the tents.

On a sudden I jumped up, startled out of my slumber by a painful sting behind my ear, followed quickly by another on my nose. A moment later Schubotz, who had just been watching my antics with a broad grin on his face, set up a cry of woe. Wiese, muttering maledictions, fumbled about in the air with his hands, striking out suddenly this way and that. Then arms and cloths were waving and whisking about in every direction. "*Nyuki, nyuki!*" ("the bees, the bees!") was heard on all sides; and, just as if the swarming insects had waited for the battle-cry, the air was simply darkened by the vindictive little creatures. "*Nyuki, angalia!*" ("look out!") "*Nyuki!*" The war-whoop resounded all over the camp. A fierce conflict raged for a few minutes, and then all was over. Cries of pain were heard on all sides, and there was nothing but hurrying and scurrying and indescribable confusion. Those who endeavoured to get their burdens into a place of security abandoned the effort and threw them down anywhere, and in a trice the whole crowd were flying down the hillside with the angry bees in hot pursuit.



A MTUALE OF RANK

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Others, and more shrewd, threw themselves down in the grass and remained motionless, and they alone were spared. Greatly disconcerted, stung all over, and decidedly "taken down" at this shameful defeat, we met together again on the lower hillslope, where the enemy was still disputing the field. Wiese had the excellent idea of getting the Askari along and shielding their faces and hands with woollen blankets, so that they might get the loads away. What a sight our camp presented! The loads scattered about, individuals lying about here and there stretched out in the grass, the dogs howling and limping about on three legs, the fowls dead! The air was still filled with myriads of bees that flung themselves angrily in dense droves upon the disturbers of their peace. The thick woollen armour, however, was almost sting-proof, and it was possible in a little while to bring the loads into a place of security. Yet it meant five hours' laborious work before a new camp was set up at a respectable distance from the first one. This little adventure gave us a lesson for the future. We never pitched our camp again under a *mti ya nyuki*, or bee-tree. The evening finished up with a violent thunderstorm, the first we had encountered in our wanderings.

Next morning the exhausted and suffering caravan met with a very strange surprise.

A procession was descending the slope with such solemn gravity and in so calm and imposing a manner that the chattering of our carriers ceased as if by magic, and we all gazed upwards mute and spellbound.

Surrounded by a large staff of young men, two ambassadors from Sultan Msinga were slowly approaching our camp. They strode along with an indescribable self-possession and dignity, like apparitions from another world, clothed in the exceedingly picturesque gala costume of the Watussi. Bussissi and Nanturu were fine upstanding men of great height, over two metres. They brought the Sultan's greetings and presents of numerous oxen, calves, sheep, goats, pigs, etc., and were commanded to escort us to their sovereign's residence.

The whole style and manner of their address and speech was very striking. One received the impression of being in the presence of an entirely different class of men who had nothing further in common with the "niggers" than their dark complexion. The demeanour of our carriers, who appeared equally impressed, confirmed our view. Having received a goodly number of presents in exchange, the two emissaries placed themselves as leaders at the head of our column.

By the afternoon we reached the Niawarongo, a tributary of the Kagera, and finished our march for the day, for the crossing of the small cattle caravans, which had now increased to the size of several hundred animals, and the transport of the numerous loads lasted until the darkness fell. As the water scarcely rose above a metre, the work was simplified by forming a chain of men across the river. In this way all the loads and animals were safely passed from hand to hand, and so to the opposite bank. We carried commissariat stores in abundance, and it was with a certain degree of anxiety that we observed day by day the increase in the number of live stock. The approach of a fresh commissariat caravan shortly after our arrival with another reinforcement of about thirty goats, which had to be assimilated with the main body, increased our anxiety. But it would be difficult to describe our irritation when we saw yet a third caravan coming down the hill-slope with another string of thirty goats, which, of course, made a further inroad on our stock of barter goods. All protests against our acceptance of the gifts were quickly met with "*Amri ya Msinga*" ("By order of Msinga").

The nearer we approached the Sultan's residence the larger grew the number of Watussi marching at the head of the expedition. We soon became aware that the Sultan was preparing a grand reception. In all the villages we passed the *Watuales* were absent, and to our inquiries as to their whereabouts we were answered by "Niansa." From all sides of the country commissariat caravans and herds of small cattle, led by Watussi, were heading in the same direction. It seemed as though the

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Sultan had summoned all the leading men of the kingdom to his residence. Many approached us and fell in at our van. When acquaintances met, they greeted one another by putting their arms lightly round each other's waist or seizing each other's elbows. They remained in this position for a few moments. "*Amasho*," one would then say ("I wish you cattle"). "*Amasho ngurre*," replied the other ("I wish you women"). It can, therefore, easily be understood that expectation became more eager daily in our caravan; everyone looked forward to some remarkable and memorable incidents and was impatient for the moment when he should be able to see the man whose name was a household word in Ruanda, whose word was law, and by whose sovereign will everyone in the whole wide realm of Ruanda existed.

At length we reached the high-lying residence. Hundreds of Watussi advanced in front, increasing the already imposing dimensions of our caravan. A few high-born subjects were escorted by a number of carriers, bearing on their heads large baskets containing apparel and necessities of life for the "Master." Others even led a cow along with them, in order that a supply of fresh milk should be forthcoming.

Shortly before our entry into the residence we had the pleasure of meeting and greeting Captain von Grawert, who had not shirked the long journey from Usumbura, and had already been camping with the Sultan for some days. Our arrival was watched from a distance, from the hill summits and elevated spots, by thousands of people, quiet in demeanour. No loud noise and clamour, no crushing throngs, as had been usual elsewhere, signalled our entrance. The behaviour of the people compared most favourably with that of their kindred on the coast.

The intense eagerness with which the inhabitants of Niansa watched us, however, had also a special reason. The imagination of the people had been strongly stirred by the display of power which had been made, and which must particularly have been associated with my own personality. The immense supplies of provisions, the vast herds of cattle, which formed the presents

from the Sultan, and the presence of Resident von Grawert, who came to meet us in full uniform, all this had made a tremendous impression on the minds of the people.

"The great ox arrives with his calves," flew the message from summit to summit. "He has four arms and six legs," which was meant less as a description of my personal appearance than the impression upon the pastoral mind of my power and might.

Thanks to Captain von Grawert's good offices, my camp was now most carefully and excellently laid out in a broad space not far from the Sultan's huts. For we were awaiting a visit from the "Mami."

Before "the mighty one" appeared, however, we were witnesses of a highly diverting scene. Great crowds of Wahutu had gathered round the camp. Their curiosity being aroused, they had flocked around and stared hard at the new arrivals. It was evident, however, that Msinga considered these masses of people would spoil the effect of his approach, for suddenly two forms clothed in red togas appeared upon the scene, staring fiercely at the crowd, and swinging long staffs round their heads with very unmistakable intent, and they whirled them recklessly, with their full strength, into the midst of the people. But the latter were apparently familiar with this manoeuvre, for at the same moment that the staff-bearers began to swing their weapons over their heads the whole mass was off in wild flight, and only a few laggards were struck. The square was empty in a trice. A few of the most curious who ventured to return had stones flung at them to drive them away.

A moment later the rolling of drums was heard from the palace, and then we were spectators of a unique drama such as could only be enacted far from the beaten path of the ordinary traveller.

The splendid figures of the Ruanda princes, with their sons, marching in pairs, headed the procession. Msinga's palanquin, which then left the gate of the residence, followed slowly. Everyone wore festive apparel, similar to that in which Nanturu and Bussissi had appeared. Their bodies were naked, but their hips were wound round by a narrow loin-cloth of tanned cow-



MSINGA'S ESCORT OF YOUNG WATUSSI WARRIORS



ENTRANCE TO THE COURTYARD, RUANDA



MSINGA'S BATWA BAND

hide in two transverse folds, from which a number of strings of otterskin or cowhide fell down to the ankles, which in their turn were adorned with various metal rings. On their heads were hair-combs reaching from ear to ear, in which a thin pearl chain lay gleaming. Long yellow strings of banana hemp hung down in a copious mass from their necks to their breasts, on which pearl ornaments of varying sizes, called *mitako*, were fastened. Their wrists were encircled with bracelets of copper wire and glass beads of various colour. Thus the train approached my tent with measured steps and quiet, dignified demeanour. Our guard of honour for the Sultan—a *Schausch* * and two men—presented arms. The Sultan's litter, a long simple basket, the bamboo rods of which rested on the shoulders of Batwa people, was carefully lowered, and with the German words, "*Guten morgen, Euer Hoheit*," Msinga stretched out his hand to me.

The Sultan's figure, a little rounded in contour in consequence of his easy manner of life, exceeds two metres in height. One searches vainly at first for an expression of his vaunted intelligence, and an eye defect, coupled with strongly protruding upper teeth, emphasises the unfavourable impression. Yet the questions which he addressed to me, and to those standing round, whilst reclining near me in a long chair, touched on the most various spheres of interest and bore witness to his keen, logical power of thought.

After a lengthy conversation, which was carried on in the Suaheli tongue and which touched on many topics, Msinga begged to be allowed to deliver his presents to me. This was a moment of great political importance and keen suspense to Msinga and his friends, as well as to his enemies, as the refusal of any portion of such presents would be a sign on my part that I was desirous of assisting the pretender to the crown, a relative of Msinga's, and that I wished to overthrow the reigning "Mami."

A tremendous gathering of people had therefore assembled

* *Schausch*, non-commissioned officer.

behind the chairs on which we were sitting with the Sultan, as well as opposite them, forming a lane, and awaiting the appearance of the gifts with painfully subdued excitement. And they came—came in endless succession. In front was a milch cow, whose calf was carried behind. She was intended to represent the greatest honour that could befall me. She was followed by ten oxen, with immense horns, and then a never-ending herd of goats. Flock followed flock, fresh contingents constantly rolling up and overflowing the cantonment. They were succeeded by an endless chain of heavy-laden Wahutu, with hundreds of loads, consisting of meal, milk, honey, butter, beans and bananas. After them appeared other trains bearing firewood—which was rare in the neighbourhood, and therefore particularly valuable. All these treasures were stored away in the camp, but the stock were driven into a hedged enclosure and placed under the guardianship of an Askari patrol. The procession had taken nearly an hour to pass by. Von Grawert himself, in spite of his lengthy term of office as Resident, declared that he had never before witnessed such an imposing spectacle.

The great and overwhelming fear of a refusal of the gifts having passed, Msinga's court breathed freely again. The visit was at an end, and with solemn farewells the sovereign entered his litter and was borne away, followed by a forest of five hundred spears. An ineffaceable impression!

The return visit in the afternoon was conducted with as much splendour as it was possible for a travelling caravan to offer. In addition to the ordinary gifts of stuffs and beads customary in the country, others were specially selected with the hope of "lightening up the countenance of the ruler" and rejoicing his heart. Any real equivalent to his own gifts was, of course, impossible. Preceded by Askari with flying flags, followed by all the "boys," each carrying a present in his outstretched arms, and with horns blowing, we entered the Sultan's courtyard, which is brightly and cleanly kept, and passed on to the palace, which is bordered round by a hedging of wicker-work and papyrus. After an interchange of the customary greetings and when we



HIGH JUMP BY A MTUSSI. (2.50 METRES)

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had taken seats, the presentation of our gifts took place. In order to heighten the effect, we ordered the "boys" up singly with their presents, so that they might be displayed to the best advantage.

The ordinary presents did not in the least excite the attention of the potentate; they were put aside with indifference or divided immediately amongst his head men. The clanging of an alarum clock, which had to be explained in every detail, pleased Msinga rather more, and his satisfaction grew into rapture when I handed him my hunting knife and a cartridge pouch filled with ammunition to fit the sharpshooter rifle which had been lent him. But his enthusiasm reached its climax when I, with much solemnity, presented him with a saw, for which he had specially asked. After a few failures, he succeeded in sawing away the legs of my chair and operating upon everything else within reach with fairly good results. The "ministry," too, watched the experiments with the liveliest interest. The Askari, who were put through their drill and evolutions, gave considerable satisfaction, and this was heightened by the firing of a few rapid volleys.

The following few days were devoted to sports and athletic exercises, of which the high jumping of the young Watussi was a most remarkable feature.

A line, which could be raised or lowered at will, was stretched between two slender trees, standing on an incline. The athletes had to run up to this and jump from a small termite heap a foot in height. Despite these unfavourable conditions, exhibitions were given which would place all European efforts in the shade. The best jumpers, slender, but splendid figures, with an almost Indian profile, attained the incredible height of 2.50 metres, and young boys made the, relatively, no less wonderful performance of 1.50 to 1.60 metres.*

With Weidemann's assistance I was enabled, by means of an excellent cinematograph apparatus, to obtain a few capital

* According to a report by the German sporting authorities, the American world-record was 1.94 metres.

pictures of these noteworthy performances, and their reproduction in Germany roused great interest.

Prizes, in the shape of "gold" chains and similar objects, were then distributed. The "Tait diamond" ornaments which I had brought with me as special gifts of honour found great favour with the trinket-loving Watussi. Rings, stars, brooches, etc., were at length so coveted that my tent was in a continual state of siege, and I was obliged to keep my admirers at arm's length, so as not to exhaust completely my stock of "precious jewels."

We were also given an opportunity of seeing a set of dances which differed in no material respect in their character from those I had watched in the Masai steppe and amongst the coastal tribes. There was no musical accompaniment to the majority of the eleven different kinds of dance which we observed, such as is usual with all the terpsichorean exercises of the negro people. In spite of this, however, there was no lack of rhythm. These dances were based on ideas borrowed from the animal kingdom, and were executed singly, or in groups, accordingly. I remember one dance which was designed to illustrate the movements of a crane. We smile, no doubt, at these naïve native customs, but quite unjustifiably. We come across the same ideas in our highly cultured Europe, for what is the clog-dance of the Upper Bavarian peasants but an imitation of the song and motions of the blackcock?

The war-dances, however, were of a different nature. These were carried out in groups, and we were able to distinguish different phases. Two parties would rush to attack each other, brandishing long rods and spears. Then a number of warriors would dance in a circle around a man who was bounding into the air with his arms held close to his body. Yet the movements were never wild; they never degenerated into those grotesque leapings and war cries, or cadenced groans, so often met with among savage native tribes, but were always measured and dignified.

Each of the dances had been well practised in the presence



HIGH JUMP BY A MTUSSI



DANCE OF WATUSSI BOYS

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of one of the great *Watuales*. The Sultan himself had assumed the stage management of the joint dances of the chiefs. At the conclusion of each new phase he never omitted to question me as to which group had best satisfied me, and I took good care that my replies should be as agreeable as possible to the ears of the ruler.

Then a number of young Watussi exhibited their remarkable skill in javelin throwing. Taking a run of ten steps, bending backwards almost to the ground, they hurled their javelins up to almost prodigious heights and with such impetus that two of the spear shafts broke in the air from the vibration. It was the same with the shooting matches with bow and arrow, in which the trunk of a banana tree was used for the butt. The shooting average at fifty metres was really good. Great strength is required to bend the bow correctly, and to draw it to its fullest extent long years of practice are necessary. The elasticity of the bow, which is from 1.30 to 1.50 metres in height, is extraordinarily great, and with the bow-string drawn to its fullest extent the arrow flies a distance of two hundred paces. Running races, too, were organised, but owing to the lack of the necessary measuring instruments I am, unfortunately, not in a position to give the times. I have no doubt, however, that in this department also the European records were at least equalled.

The effects of a gramophone performance, such as we had offered the *Watuales* some days before, were curiously varied. Some listened and presented a most stoical indifference, others opened their eyes till they were as large as saucers, and the faces of others, again, were convulsed with delight. We had occasion here to confirm our former impressions—namely, that our military marches aroused no interest, that unintelligible interlocutions caused general amusement, and that songs in a female voice, especially when they attained the higher notes, excited screams of laughter. Laughter, however, was a slight source of trouble to the Watussi. It was not supposed to be "good form" to laugh, and it was intensely diverting to watch the frantic efforts made to conceal it, hands being placed quickly

over mouths in order to hide any indiscretion. Then, after the merriment had passed, the delinquents would gaze quite gravely at the gramophone horn, until a suspicious twitching at the corners of the mouth rendered a fresh manœuvring of hands necessary.

The crowd continued to grow denser round the instrument, for the safety of which I was beginning to become nervous, when his serene highness suddenly hurled his long staff into the arena, making the splinters fly, and ending the séance.

The Sultan being also desirous of seeing the white men do some shooting, an iron pot was placed on a stake and set up at a distance of 150 metres. As I, as well as others of my company, were successful in hitting this tolerably easy mark several times in succession, the plaudits from the crowd were great, and innumerable hands were stretched out in congratulation.

The Sultan, fearing that he would be beaten if he tried his skill from the same point, approached within fifty paces of the mark. His efforts were not exactly brilliant, yet every company-captain would have been delighted with the faultless way in which he made ready and the precision with which he carried out all the movements; he was like an infantry man at the rifle butts.

The Sultan made me a further present of several objects of native industry. Yet the purchase of ethnographical material met with obstinate opposition. However, after some persuasion, Msinga gave his permission for goods to be bartered, and forthwith the whole population hastened from all quarters to enrich themselves by high prices for their wares. It was principally through Wiese's efforts that we were enabled to get together a Ruanda collection such as has never before been seen in Europe.

At Niansa we received a visit from Father Class and Father Dufays, of the mission station of the White Fathers, who came along in company with Dr. Czekanowski. Long years of intimate intercourse with the natives enabled them to give us much valuable information relative to the inhabitants of Ruanda. The day before they had paid us a very delicate attention in



WANJARUANDA SPEAR-THROWING

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the shape of a most welcome parcel of fresh tomatoes and vegetables. This was a great treat, our enjoyment of which could not be adequately appreciated save by Europeans who had suffered, like ourselves, from long deprivation of such luxuries.

If we were going to fulfil satisfactorily the various tasks we had set ourselves, it was now high time that we were once more on the move. So we resolved upon an early departure.

The most singular fact associated with our visit was that we never once came face to face with a Watussi woman. It appeared that they had been carefully guarded in their huts the whole of the time, so that they might not meet the eye of any of the "whites."

When we took our leave of the Sultan, at early dawn on the 12th of August, it was with a certain amount of satisfaction. We had been afforded an insight into the court life of a negro prince and favoured with a display of his power such as no one had ever experienced previously, or would probably ever experience again. When the illimitable power of this Sultan has receded before European influence, and when busy throngs of traders encroach upon the haughty aloofness of this most aristocratic of all negro tribes, and the white man's herds graze in its pastures, then we shall be able to appreciate to the full the value of our remarkable experience.

Our last day with Msinga brought about a decision which proved later to be a most happy one, and was due to Captain von Grawert. He had told our botanist, Mildbraed, of the wealth to be found in the forest of Rugege, which clothed the marginal mountains of Lake Kiwu between Niansa and Ischangi. He spoke of its tree-ferns and of its masses of begonias, and strongly advised him to make an excursion in that direction. As Schubotz, the zoologist, was inclined to join in, this meant a further splitting-up of the expedition. So while the main body marched on with von Grawert towards the eastern bay of Lake Kiwu, and met with the events which I shall describe in the final pages, the two biologists traversed the Rugege forest towards Ischangi, at the southern end of the lake, whence Grawert was to fetch them

off in boats when he visited that part later on a tour of inspection. I will now let Mildbraed report in his own words upon their journey, which, though of short duration, was rich in the results:

"After the breaking-up of the main caravan, we marched off towards the south-west on the 12th of August. First we bade an affecting farewell to Msinga and our friends Nanturu and Bussissi, who had appeared to us like forms from a mythical land on that memorable morning in the camp before the Niawarongo. Msinga gave us, as guide and quartermaster, a young Mtussi named Miniago, a brother of the *Mtuale* of Ischangi, who was to be permitted to return to his home; common report had it that he had been summoned to the court to answer for various follies. Certainly, the young man's general appearance was not one to inspire very great confidence. He was long and lean, but very coarse-boned. After the many fine-looking *Watuales* we had seen, his face appeared of very common cast to us, and a woollen blanket which had once been red in colour did not do much towards heightening his charms. Our lack of confidence, however, decreased by degrees, for he proved himself an excellent courier.

"I doubt whether travelling in any part of the world is pleasanter than in Africa, with good Wanjamwesi carriers, but certainly nowhere in Africa is it more so than in Ruanda, when accompanied by a Mtussi. A short *shauri* (consultation) between the leader and the *mtuale*, or subordinate chieftain of the district, secures everything required in the way of provisions or other pressing need. Whenever I have had to select a place for encampment, I have always done so with great care and thought for special details. That water should be close at hand, that the site for the tents should be level and secure from inundation by storms, that there should be plenty of shade and yet a clear, free view of the country be obtainable, are all conditions with which a camping place should comply if comfort is desired after a march. Miniago relieved us of all trouble in this respect, and



WANJARUANDA BOWMEN



MSINGA SHOOTING AT THE TARGET

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revealed a perfect genius for pitching upon the exact spots suitable. It was only necessary for us to indicate the direction in which the tent was to be pitched, with the stereotyped '*mlango huko!*' ('door there!') to be assured of finding ourselves snug for another day.

"And now to the west, towards Lake Kiwu! The scenery differed entirely in character from that to which we had grown accustomed during our long sojourn at Lake Mohasi, and reminded us more of South Mpororo. Whilst the country round Mohasi appeared to be a maze of fairly lofty ridges, divided by broad valleys—a tableland traversed by numerous broken rifts, characterised by no typical mountain masses—the landscape south of the Niawarongo, about a day's march from Msinga's residence, assumed a different aspect. Numerous isolated mountains rose above the undulating tracts of land, not imposing at all in their height, but more hill-like and often strikingly regular in their conical form. This mountain scenery, however, came to an end on the first day of our march. On reaching the little river Mhogo (which, united with the Rukarara, forms the Niawarongo) the Shunda mountain group rose up in front of us like an advance post of the Kiwu Mountains, spreading over the broad papyrus valley and falling away in picturesque steep, bare declivities.

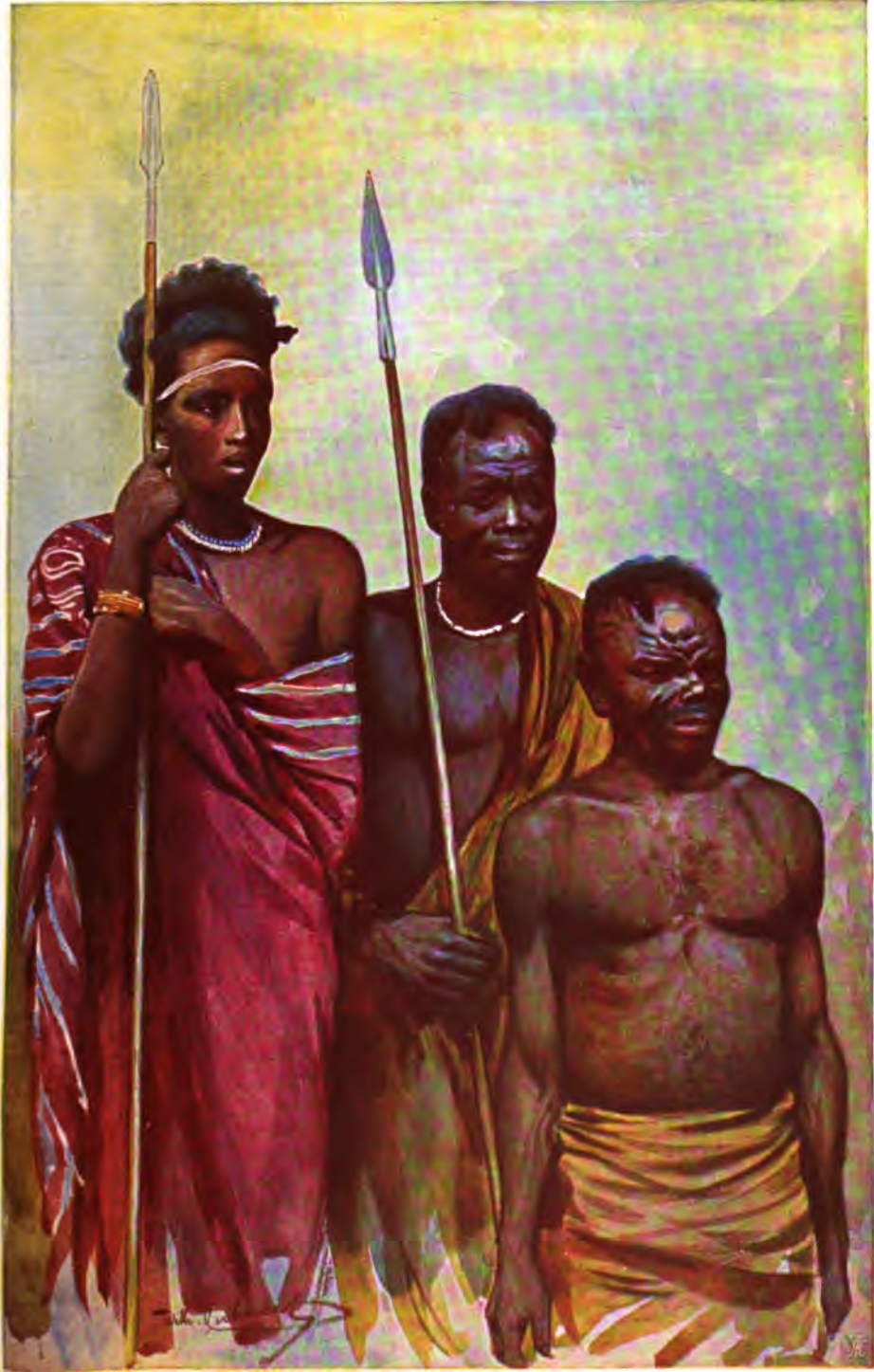
"From our line of route one gained quite another impression of the margin of the rift-valley to that which the traveller gains who goes from Mohasi or from Mpororo to the lake. On that route the road rises steadily and imperceptibly until it begins to slope down to the 'ditch,' but on our route from the east the marginal ridges appear like fair-sized mountains. Fond as I am of mountains, I must confess that when I was confronted by the steep and rugged-looking Shunda the idea of having to surmount it seemed to promise so little pleasure that I felt like pitching tents at once. But Miniago led us round the base into the valley of the Lukondo, where we camped in the shade of the mighty Shunda, on its southern slopes, which were profusely overgrown with bananas. At night we were favoured with an

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enchancing picture: a grass fire broke out on the ridge-combs, silhouetting the mountains against a line of fire. The temperature was a sharp reminder that we were in the vicinity of mountains, for our thermometer registered only five degrees in the morning.

"We marched up the valley of the Lukondo, which at this point was strikingly reminiscent of an Alpine brook, at an elevation above the tree limits. Its waters rushed foaming along between the grassy slopes, forming diminutive falls over the blocks of stone lying in its bed. Then the valley widened out into a broad, richly cultivated basin, enclosed by numerous summits, curiously reminiscent of a piece of stage scenery. Here we found a beautiful path, which led us about half-way up the basin to a pass whence we enjoyed a view of some of the higher mountains. We then descended to the Rukarara, the other great source of the Niawarongo, the young Nile, though at this spot it is merely a mountain spring, bounding and foaming in an exuberance of youthful glee over the pebbles and stones. We soon left it again, and turned to the south-west, passing through a short, narrow valley, at the end of which we pitched our camp and enjoyed a magnificent view of the country near by which we had travelled and of the forest hills we had surmounted. A very stiff piece of climbing, however, still lay in front of us before we attained the Rugege forest.

"On the third day of our march we were confronted by some mountains, whose bold, rugged forms were to us very imposing, for our appreciation had not then been blunted by the sight of the gigantic volcanoes. At a saddle-shaped pass—Katandaganja—the main climb was accomplished, and we soon came to the watershed that runs between the Rukarara and the Kiwu, and between the Nile and the Congo, the road rising gradually, and sloping again over the long-stretching ridges down to Lake Kiwu. What we had seen at the Toteninsel, Bukoba, in a small way, and was repeated on a larger scale at Kiwu, showed itself again here—a steep, rough, and rugged descent towards the east and a gentler declivity towards the west. The Ruanda plateau in a similar



**A MTUSSI, MHUTU, AND MUTUA
THE CHIEF INHABITANTS OF RUANDA. (FROM A PAINTING BY W. KUHNERT)**

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manner rises suddenly over South Mpororo, and the marginal heights to the west of Lake Kiwu and Lake Albert Edward break off equally abruptly towards the lakes.

"We had now to descend the south-west slope of Katan-danja, face to face with the peak of Ssekera, which rose up before us like a colossal cone. At its foot the road wound round another mountain mass, on the southern side of which we proposed to camp. The guide and a number of the carriers having pushed further ahead, however, we crossed one brook more, which was sparkling with clear crystal water, and pitched our tents on the opposite side on the slope of a hill. From a scenic point of view this camp had a greater charm than any we had hitherto fixed upon. Below us was the valley with the little brook; all around us lay innumerable gentle hill slopes and ridges leading to a noble green mountain mass; to the right, in the background of the picture, the summit of Ssekera, which from this spot looked like a broad, massive colossus—with the hills covered with a luxurious carpet of dark green brake fern, from which small pea-fields stood out in sharp contrast in emerald green splotches round the last scattered settlements at the entrance to the forest.

"Brake fern? Certainly; exactly similar to that which grows everywhere in Germany. We had already met several very pleasant homely species among Flora's children—blackberries, clovers (*Trifolium simense* and *usambarense*), willow-herb (*Epilobium*), a dog's tongue and sky-blue forget-me-nots (*cynoglossum*), a cock's head (*Plantago palmato Hook f.*), very similar to our big cock's head (*Pl. major*), etc. These plants showed us that we had gained that region of mountain flora which evinces such striking uniformity on all the high tablelands of tropical Africa, from Abyssinia and Kilimandscharo to the far-off Cameroon Mountains in the west.

"This mountain flora seems as it were to cap the vegetation of the steppes and the tropical forest. The bracken was richly interspersed with flowering herbaceous plants and shrubs, and the whole scene was full of charm for the botanist. One growth, however, would have awakened the interest of the veriest dullard

at botany—the *lobelia giberroa Hemsl.*, which rises up like immense candles, often to the height of a man. A powerful hollow stem, more like a trunk, bearing narrow, reversed, spear-shaped leaves, 40 to 50 centimetres in length, crowded together rosette-like, and above these a long, thick spike of green, or pale blue blossoms, resembling immense cylindrical sweepers. The measurements of one species were: leafless lower stem, 2.30 metres; leafed part, 1.25 metres; spike, 1.85 metres; together, 5.40 metres. Later I found specimens of more than 7 metres at Kwidschwi. When I first espied these strange shapes in the gorge at Katandaganja my heart beat fast at the realisation of a long-hoped-for sight, a feeling that is comparable only to that of a hunter at the first sight of some rare game. Later on their appearance was quite an indifferent everyday occurrence, for they are typical phenomena in all the mountainous districts from Lake Kiwu to Mount Ruwenzori.

“Charming as this fertile and luxuriant green wilderness of brake-fern was, however, the pleasure it afforded was marred by the thought of its origin. Where it now covers the mountain-side, not long ago there grew a proud forest of noble trees, which were ruthlessly hacked and burned down to make room for a few miserable pea-fields. The immediate effect of this wilful destruction could be seen in all its mournful nakedness on the edge of the forest—an utterly devastated zone. A few isolated giants, whose lives had for some reason been spared, still towered aloft; some still resplendent in all their beauty, others stretching out their sterile, fire-blackened, or weather-blached and withered trunks as if in complaint to Heaven.

“In further evidence of this fact I quote the following passage from a report of one of the members of the Urubengera Evangelical Mission at Mecklenburg Creek, which happened to fall into my hands:

“‘When I arrived at this forest (Bugonde) I experienced a certain feeling of sadness. You must know that certain “patriarchs” dwell here—one always more ancient and hoary-headed than the others—who systematically devastate all that is



A VILLAGE IN RUANDA



A MHUTU UMBRELLA

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left of the little wood. They fell the best trees, hew down the bamboo-cane, and burn away the undergrowth; consequently, the few trees which are left standing perish also. They then till the land and sow it with peas, and proceed to impoverish Ruanda by treating further tracts of forest in the same fashion. If the people settled on this land thus made arable and fit for tillage, there would be some sense in it; but simply to burn a bit of forest away to plant a few peas, and then destroy it further, bit by bit, causes everyone regret, even though they be not experts on afforestation or silviculture, more especially in a country so lacking in trees as Ruanda.'

"I cannot vouch for the existence of these 'patriarchs,' but as to the devastation of the forest, the missionary, Roehl, has certainly not misrepresented matters.

"The forest received us into its arms, the mountain forest of Rugege, as beautiful as any in Usambara, or on the Uganda Railway, or on the Mau plateau; glorious in its splendour and its exuberance, yet almost oppressive in consequence of its profusion of vegetation entirely new to us, which we at first nearly despaired of mastering.

"As we knew we could not be far away from the upper source of the Rukarara, we decided to camp in its vicinity. We soon found it, a clear stream flowing through marsh and woody dingle, perhaps only some two or three metres broad and thirty centimetres deep. On the further side we saw a hill covered with a sort of steppe grass, fairly level at its base. At first we thought of camping there, but as we had a vivid remembrance of the cold on the previous night, and we feared the strong radiation in the open space, we clambered up the hill and pitched our camp on the edge of the forest under the protection of the trees. There we rested—some forty metres above the cradle of the sacred Nile and some two thousand metres above the level of the sea—and gazed out into the brilliant moonlight towards the mountain forest, in which the tops of the trees showed up clear and distinct in the silvery light. Then we looked down at the delicate shrub lacery that embroiders the course of the Rukarara and up

through the light ash-like foliage of the hagenia, which spread over our table, to the nocturnal sky, from which the full moon was shedding forth its rays as cool and clear as on a winter's night at home. And no sounds around us except at times a bush-buck giving tongue, and the chatter of the carriers, gossiping and freezing round the fires like ourselves. Yes, freezing! I often awakened during the night from sheer cold in spite of a sleeping costume consisting of woollen stockings, under-clothing, pyjamas, cloth cap, and two camel-hair blankets for a covering. In the evening we drank grog made of tea and whisky to warm us up a little. How joyfully we greeted the sun when he brought us a little warmth—never more than fifteen or sixteen degrees atmospheric temperature—and left us cold again when he sank once more behind our camp hill at about four o'clock. When Grawert and Kandt were in this part their washing water froze, and when the latter was almost at the same spot at the same time of year he saw the grass and the trees thickly covered with hoar frost. And that was in an African virgin forest two degrees south of the Equator!

"Now let us turn our eyes away from the slightly elevated camp quarters, from which we could obtain an extensive panoramic view on one side—to the forest, and endeavour to learn a little of its features. In comparing it with a German forest of leafy trees two factors stand out clearly, namely, the considerably greater variety and the entirely different ages of the trees. From this it follows naturally that the colouring of the leafy crowns is more diversified, though, generally speaking, more sombre (saving, of course, the striking autumnal tints of the German forest), and that the height of the trees is very different. The impression of the closed-in canopy of foliage under which each single tree disappears is missing; the taller, fully grown trees stand comparatively free, so that their crowns are either quite separated or scarcely come into contact with each other. Thus each one conveys a separate idea, as it were, and the individuality of each tree stands out more sharply. Added to this there is a peculiar characteristic, which is most apparent in



THE CARAVAN ON THE MARCH IN RUANDA



A GROUP OF WATUSSI

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a common but beautiful olive tree, *Olea Hochstetteri* Bak. If such a tree be looked at from the side or from below, it is seen that all the larger boughs, and even the larger branches, stand out quite distinct to the eye, all the minor foliage crowding itself together on the thinner branches at the periphery of the crown. The form of such a crown might be remotely compared with the inflorescence of an umbrella plant. To complete the picture mention must be made of the beard-moss on the crown, which, though appreciable, does not accumulate to the extent of giving the impression of 'dejected greybeards,' as it does, according to Volkens, on the lofty trees of Kilimandscharo.

"For readers who are familiar with the African flora, the more important trees and tree-shrubs are here enumerated approximately to the frequency with which they are met: *Olea Hochstetteri* Bak., *Macaranga kilimandscharica* Pax, *Syzygium parvifolium* Engl., *Olinia Volkensii* Gilg., *Carapa grandiflora* Dawe et Sprague, *Neoboutonia macrocalyx* Pax, *Psychotria ficoidea* K. Krause, *Galiniera coffeoides* Del., *Xymalos usambarensis* Engl., *Bersama spec.*, *Polyscias polybotrya* Harms., *Cornus Volkensii* Harms., *Ochna densicoma* Engl. et Gilg. *Symphonia globulifera* var. *africana* Vesque (more on the margin than in the deeper parts of the forest), *Peddiea Fischeri* Engl., *Nuxia usambarensis* Gilg., *Rapanea pulchra* Gilg., *Pygeum africanum* Hook f., *Maesa Mildbraedii* Gilg., and finally *Hagenia abyssinica*, *Agauria salicifolia* Hook f., *Ilex mitis* (L) Radlk. var. *kilimandscharica* Loes., which prefer the forest clearings. The following were observed only to the west of the watercourse: *Podocarpus usambarensis* Pilger, *P. spec.*, *Parinarium Mildbraedii* Engl. We also collected towards the west of the forest *Ericaceae Ficalhoa usambarensis* Engl., and amongst sparsely growing vegetation *Faurea usambarensis* Engl. This find was very interesting from a botanical-geographical point of view, as hitherto it has only been encountered in Angola.

"Although the forest, as seen from above, bears quite a different appearance from the forests of Germany, it has a still more unfamiliar aspect when viewed from the interior. There is nothing

which recalls the colonnades of a beech forest or of a forest dome. To a certain extent this wood is impervious to the sun's rays. The whole space from the ground to the tops of the trees is filled with an overwhelming mass of green; no wood is to be seen, but only soft, luxuriant foliage and soft, herbaceous stems. There are few shrubs in the true sense in the brushwood in which the younger branches have lignified; on the contrary, a profusion of permanent growths which only lignify in their main stems may be mentioned, among which beautiful labiate-flowered specimens such as *Pycnostachys* are prominent. Lovely species of *Vernonia* with purple and heliotrope blossoms, reminding one of the *Eupatorium cannabinum*, large yellow *Senecio* and luxuriantly blooming *acanthaceæ* (*Mimulopsis*) are often found interlaced with other growths, helping with their soft, sappy leaves to swell the general wealth of foliage. The most beautiful of the twining plants was probably the reversed leaf growth, *Begonia Meyeri Johannis*, named in honour of Hans Meyer, which with its shining, fleshy leaves and gorgeous yellow-white blooms is an ornament to the underwood. The most conspicuous, however, is an amaranth (*Cyathula spec. ?*), which unfortunately I never saw in bloom; it forms great thickets and bowers, climbs high without being exactly a liana, and hangs down again in dense, broad clusters or festoons, making the undergrowth perfectly impenetrable.

"Wherever this tall brushwood leaves a little space, however, the ground is covered with ferns, blossoms, smaller amaranths, and graceful blooming *Coleus* and *Plectranthus* species.

"Incomparably rich and luxuriant as this forest is, it would yet have something oppressive about it in its exuberance if it covered all the hills and valleys. The chief charm of the Rugege landscape consists rather in its variations of wood and glade, its grassy slopes which clothe the lower valley, its dells and dales, and the well-watered fens and meadows which lie alongside the brooks and streams. The vales and meadows as Kandt saw them must have an indescribable charm: when thousands of stemmed lobelias spring up from the grass—like gigantic candles, and the green valley is buried for miles under the heads of millions of



A MNJARUANDA YOUTH



IN THE MOUNTAINS OF RUANDA

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white or silvery rose-coloured immortelles (*Helichrysum*). We only found withered stems of lobelia, and the peculiar leaf-rosettes of the young plants, which were not then in bloom. We were compensated in a small way by finding some heather strewn over with rose-coloured blossoms (*E. rugegensis* Engl.).

"The brooks themselves were adorned with a species of *Alchemilla* (*Rumex Steudelii* Hochst.) and the graceful *Hypericum lanceolatum* with extraordinarily fine foliage and large yellow flowers, and here and there were to be seen picturesquely and irregularly ramified stocks of *Hagenia abyssinica*, the Abyssinian Kosso tree, which with its pinnate leaves is reminiscent of the so-called 'Tanners' Sumac.'

"Unfortunately we were only privileged to remain one week in the Rukarara camp. Our stock of provisions, for white men and carriers alike, was seriously diminishing. It is true that we might have sent for a further supply from Ischangi, but that would have meant prolonging our stay to such an extent that the general plan of the expedition would have been upset. You may imagine what it means to the collector to have to leave so soon a mountain forest which belongs to the richest, most luxuriant, and fertile forest regions in all Tropical Africa. Certainly our hearts were not brimming over with joy when on the 23rd of August we bade farewell to a place that had become so dear to us. In spite of that, however, our botanical finds were very satisfactory, and the forest trees were especially well represented (by various material) in our collection. This was only rendered possible by my having botanised 'with telescope and rifle.' From the paths in the forest or from some elevated standpoint I would range along the crowns, aided by a good prism glass, and when a rich-bloomed but somewhat sparsely branched bough was found, I would let fire. I used nickel-coated, lead-nosed bullets of the calibre of the military rifle. In favourable cases the bough came away after two or, perhaps, three shots; but when, although broken, it still hung by a few shreds of fibre to the trunk, the expenditure of ammunition was considerable, and the marksman fell into mild despair. In any case, it was the only way possible

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when on excursions, and also when on the march with the caravan, of obtaining material from the loftier trees, and that, too, of excellent quality and in rich profusion. Of course, it was necessary to select a bough that in its fall would actually reach the ground, and not be left hung up at the top or caught by the smaller trees. A sharp look-out for blooms and fruits lying on the ground was also kept in the same manner as tracks are examined. The shots certainly caused a fair amount of splintering, and the specimens suffered in consequence of the small calibre and the excessive perforating power of the weapon used. Excellent results would doubtless be achieved with large calibre explosive projectiles fired from an elephant rifle with a relatively weaker charge of powder.

"The zoologist is even less advantageously situated than the botanist when a stay is cut too short. We did, indeed, see bush-buck, elephants, leopards, long-tailed monkeys, and colobus apes—saw them and partly tracked them, but never got within range. Our prizes in the way of birds and invertebrates were more satisfactory. At dusk, high above the valley, flocks of grey parrots would whistle melodiously in their flight to their roosting places, and a splendid touraco (*Ruwensorornis chalcophthalmicus*), a new species, closely allied to the *Ruwensorornis Johnstonei*, occasionally filled the forest with a manifold variety of cries. On the march, too, by a lucky shot Schubotz brought down a pair of giant touracos (*Corythaeola major*), similar to the grey parrot variety belonging to the West African fauna.

"After saying farewell to our Rukarara camp we soon crossed over the watercourse which lay between it and the brooks flowing to the Kiwu, between the Nile and the Congo. Our way led into the valley of the Schampf, in which for the first time in the Rugege Forest we saw the *Podocarpus*, those splendid trees with their branches stretching up perpendicularly and uniting into a pyramid-shaped crown. It was a hitherto unknown species, but as I brought away neither blossoms nor fruits, their determination is uncertain. We ought to have camped in this beautiful valley, then I should have been enabled to collect abundant *Podocarpus*



AT THE EDGE OF THE RUGEGE FOREST



SCHUBOTZ'S AND MILDBRAED'S CAMP IN THE RUGEGE FOREST



LOBELIAS IN THE RUGGE FOREST



WANJARUANDA BRINGING POMBE

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and much other matter, but as things were we were following a leader whose wish it was to get out of the wood. Miniago had gone on in front 'to look after provender,' as he said; but, truth to tell, his chief idea was to escape from the 'wilderness,' that district which causes the inhabitants of the colonised parts of Ruanda, to say the least of it, a feeling of uneasiness. In addition to this, as we had run out of water we were compelled to march much further than was originally intended. The most regrettable part of it was that we were approaching very near to the western edge of the forest, and thus lost much valuable opportunity for collecting whilst in its depths. We arrived at a small brook at last, and after much difficulty found space in which to pitch two tents in the narrow, thickly vegetated valley, surrounded by dense, lofty, tropical forest. It was very romantic, but very confined.

"Next day we emerged from the forest, travelling through a sparse vegetation of a willow-like proteaceæ (*Faurea usambarensis* Engl.), which assumes considerable dimensions there, and then into the belt of brake-fern and forest desolation. At the little river Nirahindi we fell in again with Miniago. He had procured abundant provisions, with palm juice for the carriers, and had struck another lovely camping place. We were three days' march from Ischangi at this spot and quite close to Kiwu; in fact, we caught sight of the lake on the first day. We had just crossed another hill when a view of such beauty presented itself to our astonished eyes that we were compelled to stop and gaze at it. The mountain ridges and hills dwindled away before us, receding ever farther and lower, to jut out again like peninsulas on the horizon and to rise up like islands from a pale-blue, silvery shimmering surface—the jewel of African lakes. Tanganjika may, perhaps, on the whole appear more majestic, but for a combination of comeliness and magnitude, of peaceful bays and deep fjords, of blest isles and sky-towering mountains, none can rival Kiwu.

"We marched parallel to the south-east coast of Lake Kiwu, for the most part in view of the lake, camped at the brook

Kalundura, and then, for the last time before reaching Ischangi, at Katosoma. We here encountered the first spell of rain which we had experienced since starting away from Lake Victoria, apart from an insignificant shower at Lake Mohasi. The tents had to be pitched in the rain; the cook had to perform his task in the rain; and our souls were filled with gloomy forebodings of the lesser rainy season which was approaching, so spoilt had we become with the uninterrupted fine weather of the dry season! In the evening an Askari reached us bearing a letter from Grawert, in which he bade us get along to Ischangi as quickly as possible, as he was desirous of making a further move.

"We arrived at the pretty outpost station on the 27th of August. Near the end of our journey our way had led us past a dilapidated hut under a giant solitary tree, the hallowed resting-spot, 'Bergfrieden,' where Kandt, the poet of Ruanda, had dwelt, and also past a lonely grave in which Professor Lamp, the astronomer of the Kiwu Boundary Commission, was laid in his last resting-place far away from home."

Whilst the events just described were taking place, Wiese and I were pushing on towards Kiwu, accompanied by Captain von Grawert. On our first day's march out from Niansa we found our wealth of livestock a decided encumbrance! *Embaras de richesse!* A broad, deep swamp had to be crossed, and our smaller and weaker goats stuck fast in it. To pull out the exhausted animals involved considerable delay, and thus cut short our day's march. It was late at night before the caravan, with its complement of human beings and cattle, was fully reunited. In order to avoid a repetition of such an incident, we sent the herds along a few hours in advance of the caravan, in companies of from two to three hundred.

The following day's march was again greatly delayed while crossing the Niawarongo—which we passed here for the second time—and our stock was again to blame. Although, thanks to our new tactics, the obstruction occurred earlier on the route, several hours elapsed before the main party was landed in safety



CROSSING THE AKANJARU



MHUTU WOMAN MAKING POTTERY

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on the further side, partly by means of canoes and partly by hand labour.

The camp had to be set up close to the bank, and was nearly encircled by the winding of the river. This was a circumstance of bitter regret to us on the following morning, as the whole river valley was filled with the densest mist, it being only possible to see a few paces off. The thermometer indicated six degrees (Celsius), and both men and beasts suffered severely from the cold. Still the sun, which was emerging from behind the mountains, and the fatigue of the toilsome mountain journey thawed us again, and by the time—about noonday—we had reached Kagira, where Dr. Kandt had enclosed an estate, the hardships of the early dawn were forgotten.

Kagira is a back settlement differing in very slight respects from an aboriginal village. It lies deep down in the valley, close to the narrow mountain stream Mashiga, surrounded by hills. Vainly one wonders why Kandt chose just this one particular spot for his abode, though it is said that the interest attaching to the tomb of Sultan Msinga's father, Luabugiri, which lies close by, was the attraction that kept him there.

At noon next day we sighted from afar the deeply indented fjords of Lake Kiwu. After a steep descent from the hamlet of Bujonde to the banks, we encamped under shady trees on the eastern point of the lake. It was a most extraordinary coincidence that the first inlet with which we came in contact had been christened Mecklenburg Creek by Dr. Kandt some years previously.

The lake is conspicuously northern in its character on the eastern side, for the bays and creeks cut deeply into the land, winding between the towering mountain sides, which are sometimes 1,600 metres in height.

The air appeared disproportionately warm to us after the temperature to which we had previously been accustomed, but the water, which permanently averages about 25 degrees (Celsius), exercises a very beneficial influence on the surroundings. Crocodiles are not met with in Lake Kiwu, so we lost no time in

abandoning ourselves to a thoroughly enjoyable swim, a pleasure which had long been denied us.

Our twenty-three boats—dug-out canoes—manned by six or eight rowers, according to size, lay concealed in the sedgy reed-grass waiting to bear us across the lake to Kissenji. The boats are approximately ten metres in length, with a small draught, and are very narrow. There is barely sufficient room on the seats for the two rowers, who drive the canoes through the water like arrows with their powerful arms, using heart-shaped, carved paddles. As the excessively narrow boats naturally allow only the most indispensable loads to be water-borne, the main caravan had to direct its steps to Kissenji along the eastern coast under the leadership of Czczatka and Weidemann.

In the evening, which turned out clear and still, I made a short farewell excursion alone to the centre of the lake in a folding boat. If it had not been for the black forms of the natives squatting on the hills round about, I might have imagined that I was gliding over the waters of a lake in my native land.

We were awakened in the early morning by the loud cries of the oarsmen and carriers, so that the notes of the unkindly bugle which generally broke our morning sleep were rendered superfluous.

Thanks to the rehearsal of the previous day, the stowage of all loads was got through in comparative comfort, and the signal for general departure was given by seven o'clock. We waved our hands to the marching caravan on the banks, and then our flotilla set out on the voyage.

With the water foaming at our bows, and with the characteristic songs of the *baharia* (oarsmen) ringing in our ears, we sped along over the smooth surface of the lake. It was a cool morning, and it was not until the sun began to gild the mountain tops that a grateful warmth made itself felt. And so the hours flew on. The creek widened out, and we reached open water, where a sharp breeze set in and retarded the less well-manned boats. Choppy, unfriendly waves splashed up against the sides and drenched the occupants. We saw very few water-fowl, and it was only now



KISSENJI

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and then that a pair of fox-geese flew up from the pebbly banks. The singing gradually stopped, and only the measured beat of the paddles in the water broke the stillness.

We took three days to cross the lake, resting for a short time on Mugarura Island, and again at the Mhoro Falls, which drop into the lake in high cascades. At length, on the 19th of August, we were close to Kissenji. At first we could only hazily discern its outlines on account of the mist which again obscured the scene. Then, after a little, the outline took shape, and grew into trim houses, whose white colouring made them look pretty and cheerful in the sunshine. Then further on we saw the grass roofs of a long, extensive town, the eastern side of which was closed in by the bamboo huts of our cantonment, and the western by the station and the guard house. A street, as straight as an arrow and fringed with eucalyptus trees, which ran along the bank of the lake like a marine parade, connected the township with the station. It was not long before we made out our lodgings, a charming little house, whitewashed and with a grass roof, from which my country's banner was waving a greeting to us; it was encircled by a trimly kept garden richly grown with bananas and gay flowers, and had only been completed a few days earlier. A "tea-house," finished in the same style, beckoned to us invitingly from the hill.

In honour of our arrival the whole town was gaily decorated with flags, or, rather, with substitutes for flags—red, blue, and white cloths, also gaudily painted *Kanga* (coloured stuffs much in favour for wearing apparel, and therefore useful as barter goods), which waved on all the houses. The entire house fronts, too, were ornamented with gaudy fabrics, and gave the town a really festive appearance.

Kissenji is the north-western military post of the German East African Territory. Like its Belgian neighbour, which is twenty minutes' distance away by boat, it lies in the *Territoire contesté*; that is to say, in the Belgian-German boundary territory, the ultimate apportionment of which has yet to be diplomatically determined.

The development of Kissenji is amazing. In 1906 the town consisted merely of a few native huts. In order to map out the new roads which had to be made Captain von Grawert and Lieutenant Ullrich had to cut their way with axes through the densest brushwood. And at the time of our visit, after but an interval of twelve months, one was astonished to see there a flourishing and daily growing trading centre with a population of eight hundred people and eighty *Duka*,* in which brisk business was always going on. The development of this place is primarily attributable to the energy and the astute policy of Lieutenant Knecht, who took over the administration of the town soon after it was laid out, and affords another striking proof of the efficiency of the German officer when he is allowed a free hand for the exercise of his power and abilities.

After our prolonged period of tent life it was almost like being in a large city again. The dejection of the carriers soon changed to a state of cheerfulness, and perpetual applications for advances were made for the purpose of polishing up their outward appearance, which had naturally suffered from neglect on the route.

We took supper in the company of Father Superior Barthélemy and some of his brethren at the little tea-house, which from its commanding position offered a magnificent view over the whole northern inlet of the lake and across the volcanic chain.

A few hours later our land caravan came in, with everything in good order, under the safe conduct of the non-commissioned officer and my servant.

There was a good deal of detail to be seen to and arranged before we could contemplate special visits round the neighbourhood of Kissenji, to the islands of the lake, the Bugoie Forest, the volcanoes, etc.

We dismissed the Wahaia carriers of Bukoba, who had till then rendered faithful service to the caravan and kept in perfect health in spite of the shortness of bananas, which constitute their main diet. In their place we found two hundred fresh carriers

* *Duka*, store or shop.

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waiting for us, who came from Tanganjika, chiefly Manjema, and who had been secured through the mediation of Captain Göring in Udjidji. We still had an abundant supply of stores and provisions. Two thousand loads were stored up here to meet all requirements, and we had sixty oxen and six hundred goats in our possession.

The night which followed was nearly fatal to a successful continuance of our expedition. Through the carelessness of a carrier a house behind the depot in which the whole of the loads and all the valuable instruments were lying caught fire and was burnt down. We had hardly laid ourselves down to sleep when we were roused by shoutings and the sounding of the fire signal. Clad only in pyjamas, we made for the scene of the conflagration at the double. The Askari and the carriers were all flocking to it, and by working hard together, and incessantly flooding the thatched roof of the magazine, our efforts to avert the threatened disaster were eventually successful.

Grawert sailed off on the 22nd of August to the south end of the lake in order to inspect the post at Ischangi. We ourselves spent the day in paying a visit to Ngoma, the neighbouring Belgian post, whose leader, Lieutenant Ogg, had come to greet us on the previous day. We were welcomed in the most amiable fashion, and here we received our first experience of the lavish Belgian hospitality, for which we had good reason to be very grateful in later months. Ngoma cannot be compared in any way with Kissenji. It has a depressing influence, and with the exception of the officers' house, which was in course of erection at the time, it consisted only of miserable thatched huts. It shares with Kissenji a position in the debatable territory. The powers of authority vested in the officer stationed at Ngoma are very small, and are limited to the place itself and the immediate surrounding district. It forms part of the Russisi-Kiwu district, and, like Kissenji, is built entirely on lava, which also forms the building material for the majority of the houses.

Kissenji possesses an excellent climate, for by virtue of its 1,500 metres altitude above the sea level all enervating heat is

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banished. The natural coolness prevalent in consequence makes a visit there a very agreeable experience. The man who has this place allotted to him for his sphere of activity draws a prize. In front are the swirling breakers of the most beautiful of all the Central African lakes, framed in by banks which fall back steeply from the rugged masses of rock; at the rear the stately summits of the eight Virunga volcanoes. Truly he who has once seen this delightful spot, and who has had the good fortune to view the nocturnal skies when illuminated by the glowing blood-red colours reflected by the flowing lava of the active crater of Namlagira, has added a pearl to the treasure chest of his memories, inalienable for life.

A more grandiose spectacle still awaited us on the evening of the 29th of August. It was glowing red in the heavens as far as one could see, and the mighty crater of Namlagira was thundering prodigiously. Fireworks of glowing rock and stone flashed up high in the air. A column of smoke, illuminated brightly by the fiery reflection of the outbreak, rose slowly up into dizzy heights, and then expanded mushroom-like for many miles around. We stood long admiring this natural phenomenon, overcome by its majesty, until the gradual fading of the glow indicated the end of the eruption.

The delightful recollection of this scene was rudely dispelled the next day, for a Job's messenger arrived with the news that a mail caravan with its various loads organised for our benefit had been attacked and pillaged by the Ruanda aboriginals. Captain Grawert being still away, measures for regaining possession had to remain in abeyance. However, an energetic protest despatched to Msinga soon brought about the desired result. We were quickly placed in possession of the complete mail from Europe and all the plundered goods. The ringleader of the attack, however, met with a heavy punishment. Msinga had him seized, and then pierced through with a sharp stake before the eyes of the people. The body of the robber was then exposed for weeks to serve as an example of the sovereign will of the ruler of Ruanda.



WANJARUANDA AT WORK IN THE FIELDS



WAHUTU

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After Raven's successful tour in the Bugoie Forest, on which he had been accompanied by the Batwa people, he and I undertook a boat journey to two small, easily accessible islands, which at one time served the aborigines as burial places, and, doubtless, still do. We proposed to assist our anthropologist to obtain a collection of skulls. We found skulls and skeletons there in large numbers, and some of them had roots of trees growing through them. One skull had roots spreading through both the eye-sockets, and presented a very curious appearance. On the smaller of the islands we discovered the corpse of a woman, scarcely decomposed, and bound in a humped-up attitude to a tree. One of the oarsmen averred that the woman had been carried there after her death, yet we were not at all satisfied with this assertion, as it is a notorious fact that unfaithful women and girls in that country are surrendered to a living death before confinement as the penalty of their infidelity.

Weiss and Kirschstein joined us again via the mission station of Njundo a few days later, after their exhausting but successful survey and geological investigations.

Both of them had found themselves in a critical position at times, as in journeying from Mohasi to Kissenji they had used a route which turns off into territory where the Watussi and the European influence is not yet widespread. Weiss chose this route in order to complete his surveys, in spite of the Resident's advice to the contrary. He reported to me the following particulars:

"The Wahutu here respected the authority of the Watussi but little, and just as little did they want to have anything to do with us (Europeans). In addition to this unconciliatory attitude on their part, they happened to be celebrating their harvest festival and were nearly always intoxicated, and, in consequence, in very bellicose mood. All we required from them was provisions for our caravan and a guide in return for good payment.

"Our guide, whom we had commissioned from the last camping place, had been rendered incapable in consequence of his having fallen in with a good friend on the road, whom he had

deprived of his well-filled *pombe* jug. He had then refreshed his inner man so generously, that he afterwards just staggered to and fro in a drivelling condition in front of the caravan, to the great joy of our carriers.

"The Wahutu misunderstood our friendly intentions, however, and began to yell and bellow war cries, which resounded from village to village, and after a very short interval we could see the natives streaming in great bodies towards us from the valleys and the hill slopes, armed with spears and bows and arrows.

"By daylight we could easily have held them in check with our half-dozen rifles, but we should have found it impossible to defend ourselves against a crushing night attack.

"The warriors assembled on the summit opposite our quarters. We could observe the village elders holding council together. Detachments had already been sent off down the slopes in the direction of our camp. I decided then, in order to prevent any bloodshed, to approach them, attended only by my interpreter, in order that I might treat with them.

"Having proceeded half-way—I had ordered the Askari back to the camp in spite of their desire to accompany me—I commanded my interpreter to call out to the natives assembled on the hill that I entertained none other than friendly intentions. They might know this by my being perfectly unarmed. I challenged them to bring their elders along to confer with me.

"For a considerable time they made no sign. It was a highly critical situation, especially as the people had crept round me on the declivities, and were covering me with their bows. My only comfort lay in the knowledge that the arrows were not poisoned.

"At last one of the village chiefs advanced towards me, unarmed, like myself. I advanced a few paces to meet him, and greeted him with a firm shake of the hand. This sealed peaceful relations, and in an hour's time we had received our needed stores and also a guide in a fit condition for service."

After Schubotz and Mildbraed had also returned from their explorations in Rugege, travelling together with Grawert from



MOVING A HUT, RUANDA



BANKS OF LAKE KIWU AT KATERUSI

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Ischangi to Kissenji, we were all united again with the exception of Czekanowski.

Our union was but a short one, however, and served mainly to arrange our latest collections and to plan fresh excursions, which were calculated for a period of about a month each.

Whilst Weiss and Kirschstein started off for surveying and geological purposes at the northern point of the lake and to the volcanic districts lying westward of Virunga, Raven, Wiese, Grawert, Knecht, and myself prepared for a trip to Lake Bolero. From there we three members of the expedition were to pay a visit to the eastern volcanoes and the Bugoie Forest. Mildbraed and Schubotz returned to Lake Kiwu, with which they were fascinated, and where the virgin island of Kwidschwi, and the biological study of the lake in general, promised them work of an extremely interesting nature. The following chapter from the pen of the zoologist will convey some idea of their impressions of the expanse of water and of their experiences on the lake.

CHAPTER V

LAKE KIWU AND ITS ISLANDS

OUR first view of Lake Kiwu, on the way to Ischangi, after a series of exhausting marches through Ruanda and the Rugege Forest filled us with enthusiasm. The sight of a vast expanse of water after long travels by land and on foot has ever since the days of Xenophon impressed the traveller with a sense of freedom, and something of the joy of his 10,000 Greeks when they cried "The sea! The sea!" was experienced by us as Lake Kiwu came into view. Kandt's description of its beautiful situation, its splendid scenery and grand climate, coupled with the tales of German officers who had been there, had prepared us and given us a foretaste of the treat in store for us. For weeks we had spoken and dreamt of it. Lake Kiwu was our first important goal, where we all hoped to achieve scientific success. The first thing that we saw was the largest of its little inlets, and named "Mecklenburg Creek" by Kandt. Hilltops and summits lay around covered with banana groves, pea and bean plantations, bearing witness to the industry of the Wahutu people, who live densely massed together there. Light mists hung over the surface of the lake, concealing the more distant islands. The rays of the sun scintillated here and there on gently rippling wavelets, and the roseate tints of the morning sky, the fresh green of the banks on the lake, and the emerald, gleaming water made a lovely picture.

Lake Kiwu is the last discovered of the large Central African lakes. Vague rumours of its existence, it is true, date back to the sixth decade of last century. They are accredited to the Arabs who traded in slaves and ivory to Tanganyika and with



THE FALLS OF THE RUSSISI

whom Livingstone came in contact at Udjidji. But these reports led to extremely dim conceptions of the lake, and it was reserved for Count Götzen to gain the first accurate knowledge of its proportions and character. The count visited it on his journey across Africa in the year 1894, and navigated its northern end as far as Mugarura Island. Dr. Richard Kandt explored the lake more thoroughly in the years 1898-1901, and Kandt's topographical survey was finally completed by the German Congo Boundary Commission. Ample data concerning Kiwu are to be found in "Statements from the German Protectorates, 1904," from the pen of Captain a. D. Herrmann and in Kandt's "Caput Nili." Only the most essential facts concerning it need, therefore, be given here.

According to Weiss's estimate the lake lies at a level of 1,500 metres above the sea, high up at the end of the Central African rift-valley. It is 101 kilometres in length and 50 kilometres broad. The shores are extraordinarily cleft and rifted, so that often, especially on the eastern side, they are strongly reminiscent of northern fjords. The lake itself is framed in by innumerable mountain crests and summits which rise to 2,800 metres and form ridges. Those in closest proximity are bare, either steppe or arable land. Somewhat farther away glorious and stately forests take their place. In addition to its rugged shores this lake is characterised by its wealth of large and small islands. The shores are only sparsely covered with sedge grass and rushes, and are mostly shingly and incrustated with lime. These incrustations, which point to a higher sea-level in former years,* sometimes gleam out white from amongst the greenery of the wooded island banks. Another characteristic of Kiwu is the hot springs which are found on the north-eastern shore on the peninsula of Irungatscho. Their temperature, according to Kirschstein's measurements, rises to 72 degrees (Celsius). They apparently form an attraction for fish, for in their vicinity the primitive nets and baskets of the natives are often met with.

* Kirschstein discovered that these formations rise as high as eight metres above the present surface level of the lake.

The original formation of the lake appears, according to our geologists, to be closely connected with the formation of the Virunga volcanoes. At an earlier period a water basin which was united with the present Lake Albert Edward is supposed to have been divided through volcanic action, and then so dammed up that it found an outlet for itself southwards in the shape of the present River Russisi. The harmony which exists between the fossilised molluscs found by Kirschstein in the crustaceous formations and those still found at Lake Albert Edward may be taken as confirming this theory, as well as that the entire riparian land watered by the Rutschuru north of the volcanoes is an old sea-floor; the fossilised shell banks and numerous sea shingle deposits are sufficient evidence of this.

We had some little knowledge of the flora and fauna of Lake Kiwu, through statements which Kandt had afforded, who, amongst other material, presented a comprehensive collection of piscifauna to the Zoological Museum of Berlin. It was our duty now to endeavour to augment and complete the observations already made, especially with regard to the lower organisms. As the time at our disposal was comparatively limited, it was naturally not in our power to make a really exhaustive exploration of the lake. The biological investigation of a great water basin necessitates months and years according to the degree of thoroughness aimed at; for it is not only a question of the area to be explored but that the qualitative and quantitative syntheses, which vary according to the days and seasons of the year, necessitate frequent experiments. Thus there are only a few European lakes which we know thoroughly from a biological point of view, and it will be a long time before we shall be in a position to assert this of the African lakes. All our knowledge of them so far can only be termed superficial at the best, and is proportionate to the brief time devoted to their study and the lack of methodical research. Yet these superficial examinations are, in their way, very valuable, as they emanate from quite, or nearly, unknown districts, and they furnish us at least with knowledge of a general character respecting the regions in



BOATS ON LAKE KIWU



"FISHING" WITH DYNAMITE

question. Our visit to the islands of Lake Kiwu was a matter of great importance because they lie exactly on the boundary line between the two great divisions of the continent, so entirely different in character, the western forest zone and the eastern steppe zone.

For these reasons, therefore, Lake Kiwu marked an exceedingly important point in our programme, and almost immediately after our arrival at Kissenji we started making excursions on the lake in our little folding boats. We seized the earliest opportunity to experiment with dynamite for fishing purposes. Although in a general way such a method of fishing is to be condemned, it may strongly be recommended for purely scientific purposes. No other method, whether angling, net-, or basket-fishing, can give such satisfactory results. Just the factor which renders this method "taboo" for professional fishermen—namely, the killing of young, insufficiently developed fish—makes it of the greatest value to the zoologist, for in this very way he learns to distinguish the younger forms of species from those fully developed, from which they often differ considerably in colour and shape. Dynamite, too, is most serviceable in bringing those fish to the surface which maintain a hidden existence at the bottom, amongst stones and plants, and thereby elude ordinary fishing methods. The quantity of fish captured varies according to the amount of blasting material employed and the plenitude, or otherwise, of fish life in the waters worked, yet it always falls short of an average catch with the net.

I will not attempt to deny that my first experiment with dynamite caused me a certain degree of uneasiness. Weiss was the only one of us who had had any experience, and that he had almost forgotten. I selected with great care a fuse of ample length, about 60 centimetres, which had to be attached to a bomb weighing some 50 grammes; so that, whatever happened, I could get well away from the sphere of action before the explosion occurred. Accompanied by my "boy," Ali ben Mahsud, who could manage his oars passably well, I got into our little boat and made for the mouth of the Sebeja, which

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ran right in front of our camp. Our travelling companions, who remained on the shore in momentary expectation of a terrible spectacle, sent ironical felicitations and benedictions after us. I then lit the fuse with my lighted cigar, and flung out the bomb as far away from the boat as possible. A small cloud of smoke which rose, hissing softly, from the surface of the lake marked the spot where it fell. It was high time then to get a good distance away from the gruesome bomb. Ali rowed like a racer, and, making a final spurt, in a twinkling we had got about a hundred metres from the smoke. A breathless moment elapsed. Then a dull, weak-sounding report was heard, a little fountain spurted up from the spot in question, and all was over. Loud bursts of laughter relieved our companions on the banks from their breathless suspense. No one had been blown up; we all stood firmly on our legs, and only the faintest concussion had been noticed. We rowed leisurely to the scene of the explosion, and gradually collected all the fish which had been driven to the surface. There were from one to two dozen percine *cichlida*, very frequent in Africa; all small specimens a few inches in length. They lay motionless on the water, their air-bladders protruding from their mouths, or swam round in circles, breathing with great difficulty. The dark-coloured males exhibited beautiful bronze-green cross-stripes, and the females carried their young fry of five or six in their mouths, a habit peculiar to this species and intended as a protection from danger.

This very harmless explosion had quite solved our doubts as to the dangers attending such proceedings. The fact that only a very small number of little fish had been killed by a single bomb led me in future always to use two or three bound together with wax-cloth. Not until then was I enabled to secure any big fish. The scurried flight from the point of concussion had also proved itself unnecessary, and so we afterwards contented ourselves with leisurely rowing twenty to thirty metres further away, and there quietly awaiting events. It is true that the fountain tossed up from the smooth surface by means of



FLYING FOXES



STALACTITE FORMATIONS ON THE SHORES OF WAU ISLAND

a charge of 100 to 150 grammes of dynamite attained a very considerable height, but there was no danger so long as the boat did not lie immediately above it. This, of course, is easily avoided by watching the smoke. Little remained to interest biologists on the flat sandy beach of Kiwu in the locality of Kissenji, and so we prepared for a tour of the islands of Kiwu.

On the same day that the Duke, with Lieutenant von Wiese, von Raven, and Captain von Grawert, marched into the country of the rebellious chief Ngrue, Mildbraed and I left Kissenji for a journey to the islands of Mugarura, Wau, and Kwidschwi. We contemplated staying a week on the last-named island in order to secure as comprehensive a collection of zoological and botanical material as possible. Thanks to Lieutenant Knecht's help, the seven boats which were needed for the transport of our tent-gear and zoological and botanical material were punctually on the spot. The boats are dug-outs, averaging ten metres in length and one in width, which have been built by the natives for many years by means of fire and a peculiar sort of hatchet. Four or five narrow boards serve as seats for each pair of rowers. In the stem a specially powerful oarsman acts as steersman. The oars have heart-shaped blades and sweep round with a long-drawn stroke. The oarsmen at Lake Kiwu wore no special articles of ornament, but merely copper or brass rings, etc., such as we found prevalent among the Wangilima rowers on the Aruwimi. It was with somewhat mixed feelings that we trusted our persons for the first time to such antediluvian craft, on our journey from Ischangi, at the northern end of the lake, across to Kissenji. Yet our fears that in consequence of their long, cylindrical shape they might roll over on their longitudinal axis were unfounded. The thick floor of the boat—which is very heavy in comparison with the extremely thin sides—acts like a leaden keel, and the narrow beam almost entirely excludes any danger of overbalancing through unequal loading. Their carrying capacity is amazing. We could load up every available empty space in the boats after we and the oarsmen were seated without detracting in the least from their seaworthiness. These

canoes are really excellent for calm weather travelling, though they are inadequate for coping with the storms not infrequently encountered on Lake Kiwu.

We met with our first unhappy experience in this direction upon the occasion of our journey from Ischangi to Kissenji, which we undertook in a flotilla of ten boats in company with Captain von Grawert. The first day passed away most agreeably in the finest of weather. On the second, however, we were surprised by foul weather as we were crossing the open water (about twenty kilometres in breadth) between Kwidschwi and an island lying to the eastward of it. A violent breeze swept across the lake and swirled up waves which foamed and splashed high above the two-foot gunwales of the largest boats, in the bows of which we Europeans were sitting. Through the laziness of certain of the oarsmen the boats of the flotilla had drawn a good deal apart from each other during the course of the day. Thanks to our constant urging of our crew, we Europeans reached the safe shelter of the island without any greater inconvenience than a thorough drenching. By degrees the other boats, more or less filled with water, arrived, with the exception of two, which, being the last of the procession, met with the full violence of the storm. These, unfortunately, while yet some distance from the island, fell victims to the waves without our being able to render any assistance. Mildbraed's "boy" Max, or "Maxi," as the Wasuaheli called him, a typical coast boy, was seated in one of these boats. As a European's "boy" and "Daressalamer" he always laid down the law and deemed himself far superior to the carriers and "washensi" (negroes of the interior). In this accident on the lake his shrewdness stood him in good stead. Recognising the gravity of the situation he speedily made up his mind and leapt into the water just at the moment when a rather bigger boat at the rear passed the one he was in, which was already half-filled with water. A few strokes of the oars made it possible for him to clamber on to the gunwale of the other boat. In this boat sat Amdallah Mjamwesi, an Askari, who, strange to say, exhibited lion-like



THE SHORE OF LAKE KIWU AT KISSENJI

courage when lion-hunting but went in deadly fear of buffaloes. He was afraid that Maxi would capsize his canoe, and threatened to shoot him through the head if he attempted to climb in. Maxi hesitated a moment, but decided to risk the chance of death by Amdallah's bullet to the more certain watery death; and he did well, for Amdallah reconsidered his intention, happily for him, and laid down his rifle. Thus he became Maxi's saviour against his will. The oarsmen of the two overladen boats, however, ten in number, found their death in the waters of Kiwu, the first victims of the expedition. The two most prominent characteristics of their race—heedlessness when things go well and fatalism when in the face of danger—led them on to their doom. It was always a source of the greatest vexation to us to notice how our oarsmen, powerful Wahutu from the northern shore of the lake, dawdled away their time when the sun was shining and the lake was smooth. It was only when the wind sprang up and the waves began to roll that they woke up to their work.

This sad event induced us to take all needful precautionary measures in future expeditions. When we had to pass over broad open sheets of water, unprotected by any islands like those between Mugarura and Wau, or Wau and Kwidschwi, we would start at sunrise so as to reach our destination fairly early in the forenoon, for experience had taught us that the stronger breezes usually sprang up about noon. The oarsmen row to a set stroke, whether in haste or no, and pull two long strokes and one short one, or one long and two short strokes, with the loosely held paddle-shaped oars. Now and again they work themselves up to brisker efforts by the aid of peculiar cries led by one of their number, the last word always being repeated by the chorus. Unfortunately this method of progress is not of long duration, and just when it would be of most service—when there is a bit of sea—they lose their heads. Directly any wave splashes into the boat they imagine that their last hour has struck, and are inclined to stop rowing altogether. At these times a great deal of energetic encouragement on the part of the Europeans is

necessary, and reason has to be rammed into their heads; consequently when we left Kissenji we distributed our party in such a manner that there was a trustworthy and dependable man in each boat. Mildbraed and I sat in the two bigger ones, and in the others there were always an Askari, my faithful old carrier-leader Compania, our cook Majuto, and Hassani, one of our native assistants, to fill such places of honour. Each of these was given strict orders to see that the boats were kept close together.

We had reason to be thankful for these measures even on the first day on our passage between Kissenji and the island of Mugarura. Amdallah's canoe, which was packed with zoological material, drew water, and, as bailing was of no avail, she had to be escorted by her two neighbouring boats and drawn up on the strand, two hours' distance from Kissenji. Amdallah waited there until another boat could be sent along from Kissenji to re-ship the loads. The journey from Kissenji to the island of Mugarura is not of so much interest as the reverse journey. One does not get the splendid view of the grand scenery of the northern shore and the Virunga volcanic chain, which is to be enjoyed when coming from the south in fine weather. The hills and mountain summits of the eastern shore are not wooded and are either clothed with steppe grass or native vegetation. They are fatiguing to the eye, and so when the sun rises higher by degrees, and its burning rays shoot down mercilessly on pith helmets and its reflected light on the surface of the water hurts one's eyes, there is nothing better to be done than to bury one's face deep in the helmet and attempt to sleep. The uniform, monotonous strokes of the oars help to make it more than an attempt. Now and again beautiful dreams are disturbed by the call of a "boy" or of the rowers: "*Fissimaji, bana*" ("Master, an otter!") Then one's hand steals towards the gun always kept in readiness for this purpose in the bow of the boat, and the hunt (generally useless) for the wily fish-stealer begins. Otters are the sole large amphibious inhabitants of Lake Kiwu. Neither hippopotami nor crocodiles are found there; the latter, indeed,



THE ISLAND OF MUGARURA, LAKE KIWU

do not appear to exist in Ruanda. On the other hand, otters are plentiful, and it would be difficult to make a more or less extended boat expedition on Kiwu, Mohasi or Bolero without seeing some. Their fine skins, which, however, are of considerably less value than our home ones or those from North America, make the animals very much prized even among the natives. The Watussi, as well as the Wahutu, use the skin, cut in long strips, for adorning the large tobacco pouches which they wear on their breasts. Fashioned also in strips, it ornaments the loin-cloths of their festive attire. The frequent requests for otter skins made by Europeans who have neared Lake Kiwu stimulated the shore-dwellers to pursue otters more zealously, and thus these animals, originally fearless, have now become very timid. One rarely gets within shooting distance of them. When swimming, they, at the best, only stretch their heads above the surface of the water, and then only for a short moment. A quick, good shot is therefore needed to hit them. But even that is not everything. When mortally wounded, the otter sinks in a few seconds, and it more than once happened that we were just in reach, as we confidently believed, of our booty when it vanished before our eyes.

Mugarura is one of the largest islands in Lake Kiwu. It lies in the eastern half and, perhaps therefore, has mainly a steppe character. Only the northern and western parts are covered with dense brushwood, which, however, is different in character from that at Kwidschwi and Wau. We pitched our camp at a pretty spot and stayed a full day, during which we traversed the island in all directions. Whilst the eastern part is devoid of beauty in landscape, the western offered us the most charming sylvan scenery. The gently ascending bank is here bordered with several quiet little coves, which in beauty might rival the Mecklenburg lake scenery at home.

Count Götzen found a great troop of flying-foxes (*pterocyon stramineus*) in the woods on the banks of one of these coves, and they declined to be driven out of their favourite trees either by shooting or yelling. Kandt refers to them in his book of travel.

Since then a decade has passed away, and these animals appear, in the meantime, to have increased considerably. The numbers we saw hanging in the branches of the trees might be reckoned in thousands. Like the sea-birds on a northern island, or like the plums on the trees in a good fruit year, we found the flying-foxes here, and, like a host of gnats, they rose up in the air, alarmed by our shots, flew screeching loudly round our heads, and in a little time settled down once more in their former resting places. Their movements in flying are measured, similar to those of the seamew. In the evening, on returning to our tents from our tour round the island, we observed the flying-foxes at a great elevation flying towards the distant Kwidschwi. It was probably hunger that drove them thither. Mugarura would hardly be likely to produce a sufficient fruit supply (chiefly wild figs) to maintain so vast a number.

The island is not inhabited—that is to say, not continuously. We found a few Watussi there, of a low order, with their cattle—about twenty oxen. They slept in small scanty huts, which one could see were but for temporary use. Probably the cattle are taken there to graze at the beginning of the rainy season.

An open stretch of water about two miles wide divides Mugarura from the smaller island of Wau, which lies to the westward and is also uninhabited. It takes two hours to cross, and even this short interval of time is sufficient sometimes, on fickle Lake Kiwu, to place boats in really dangerous situations. More than one visitor to Lake Kiwu has experienced this. Kandt, who saw more of the lake than anyone else, relates that whilst returning from Wau he met with stormy weather, and that it was only with the greatest difficulty that he succeeded in bringing his boat, half-full of water, into a harbour of safety on the shores of Mugarura. For these reasons we hurried when we left the island. This proved fortunate for us, for, in about an hour from our leaving, the sky, which had been quite bright at first, clouded over, and storm-heavy clouds, broken by brimstone-yellow patches, hung over the mountains of Ruanda. Short, sharp and violent squalls swept over the surface of the lake, and wave



A COLONY OF HERONS



WESTERN SHORES OF MUGARURA ISLAND

after wave splashed over the bows of our canoes. Our threats of punishment for any who ceased to row had their effect. Our dug-outs flew over the water, and we glided safely into the sheltering little bay of Wau Island as the torrents of descending rain obscured the eastern shore from our view.

Wau belongs to the smaller of the islands of Kiwu, but is, perhaps, the most beautiful of them, so far as scenery is concerned. It would make a simply idyllic haven of retreat for dwellers in great cities who were in need of rest. The island is about 3 kilometres long and 1.5 kilometres in breadth at the two rounded ends. In the middle it is drawn in, at the waist as it were, to about 100 metres, by two picturesque coves. This is about the flattest part, and the land ascends to some 50 metres. We pitched our tents here; in front and behind us there lay a fine white sandy shore, which looked most inviting for bathing purposes. Wau affords beautiful views towards the west and north. In the west may be seen the northern end of Kwidschwi, to the north of it two smaller islands, also densely wooded, and a good 30 kilometres farther back is the immense western margin of the Central African rift-valley, whose 3,000 metre-high ridge is covered with virgin forest. One obtains a still grander view in favourable weather when looking to the north. One morning, at six o'clock, I stood on the highest point of the island in the clearest of weather—for it had rained incessantly throughout the night—and the Virunga volcanoes were visible. Looking northwards, the graceful outlines of Mount Ninagongo, 3,391 metres high, rose up over the broad motionless surface of the lake, which was about 40 kilometres broad at this point. Farther to the east the jagged giants, Mikenjo and Sabinjo (4,380 and 3,704 metres respectively), stood out prominently, and finally came Karissimbi, the highest of the volcanoes, whose lofty summit (4,500 metres), crowned with snow, was glittering in the morning sun.

Wau is half covered by dense forest growth, the predominating trees of which are a species of fig, with white trunks and beautiful, sometimes ball-shaped, tops, the thickly-covered

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boughs of which droop down over the surface of the water. The very luxuriant undergrowth renders it very difficult to penetrate the forest, so that Mildbraed, after many unsuccessful attempts to procure certain kinds of wood, adopted the scheme of shooting from the boats at the branches of trees on the banks—a somewhat unique method of botanising. The rest of the island has the steppe character. Right in front of our tents stood two medium-sized specimens of the glorious *Erythrina tomentosa*, the most beautiful of the African steppe trees. Its great blood-red blossoms form the favourite food of the sun-birds (*nectariniidæ*), those diminutive, most gorgeously coloured birds which in Africa take the place of humming-birds. With their long beaks, these dwarfs of African ornithology search the blooms for insects. There is an incessant soft flitting from tree to tree. I was able in a very short time to secure five different species for our collection, several of each kind, and I could have increased this number to any extent. Other striking denizens of the island, which always gave me pleasure whenever I came across them, were the grey parrots, the “kasuku” of the Wasuaheli. Their sonorous call-notes resounded from morn to eve from the trees behind our tents. The proudest bird, however, and the strongest, the ruler of Wau, so to speak, is the screaming sea-eagle. Motionless, as though stiff and frozen, sitting in his favourite resting-places (tall, decayed trees on the banks), the lonely, stately bird, high above the sea of foliage, with the lake gleaming silver in the tropical sun for a background, offers a picture which no painter's hand could improve upon.

Bush-buck are the only larger kind of mammals which live on Wau. There have been manifold speculations as to how they got there, and as to the beginning of the island's formation. Kandt and the members of the Boundary Commission came upon their tracks, but could not capture the animals themselves. It was thus important for us to obtain a specimen of these islanders, who had without doubt been cut off from the mainland for a very long period. I found a trail immediately on making my first round tour of the northern point of the island. Perhaps I



KWIDSCHWI ISLAND



A CLEARING IN THE FOREST OF KWIDSCHWI

should have succeeded in taking home this coveted prize if I had not been seduced by a fox-goose waddling along, which I immediately made mine for the sake of our larder. The shot started up a bush-buck which had, concealed from me, been browsing behind a hill, but which, with a few bounds, at once disappeared into the forest. It escaped me a second time in a similarly annoying manner. I had stationed myself one afternoon at a spot on the edge of the forest, which, from the many tracks of game, promised me some likelihood of success. Half-hour after half-hour fled by, but no bush-buck was to be seen. The sun had long sunk below the distant Congo mountains, and there was no longer light enough to shoot by, when across from the camp there approached the flickering glimmer from the lantern of the Askari who had been ordered to fetch me. I stood up dejectedly and went to meet him. Then there came a short shrill cry of terror, and a yellow shadow, twenty paces away, fled back into the forest. My chagrin can be imagined, for we had to proceed farther the following day, and all hope of getting the important zoological specimen was gone. But I had reckoned without my trusty comrade Mildbraed. By no means a born hunter, he had, up to the present, used the skill in shooting which he had acquired in the Prussian military service almost exclusively for botanical purposes by bringing down the blossom-bearing branches of the virginal forest. As regards living animals, his bullets had so far only been utilised for despatching certain billy-goats of our flocks destined for slaughter, and here and there a crane which had stood in the way of his caravan. Therefore, my amazement was not small when I understood the "*bana maua*," or "Flower-master," had shot some game. Whilst making an excursion to the southern half of the island, Mildbraed had suddenly noticed something red moving slowly in the high steppe grass. Raising his gun hastily, he let drive, and the famous bush-buck of Wau lay at his feet—a full-grown female of the species (*Tragelaphus roualeyni*). It appeared smaller to us than the specimens collected elsewhere. In what way it differs—if differ it does—from the animal which frequents the banks of the lake, cannot be deter-

mined until a careful comparison has been made. Having very carefully attended to the dressing of the skin, we celebrated the event by cracking a bottle of Moselle. It was Mildbraed's first successful hunting exploit in Africa, but was followed by many others, by which our collection was enriched with many a fine specimen.

Next morning we left Wau, the idyllic, in most beautiful weather, and sailed for the west coast of Kwidschwi. The departure was, of course, accompanied by the usual noise and bustle. We were obliged to distribute our reserve stores of provisions, which had been sent after us on a primitive dhow from Kissenji to Wau, amongst the eight dug-outs, and the rowers behaved as if they feared the additional loads would imperil their boats' safety. In reality that only meant laziness, for there was positively no danger to be feared with the mirror-like smoothness of the lake and the proximity of the banks, which lay right alongside our course. A few thrusts in the ribs from the Askari settled matters much more expeditiously than our despairing attempts to convince the men by words, and thus we at length got into the boats. I sat lost in thought in a deck chair in the bows of my boat, turning the pages of Kandt's "Caput Nili," and revelling in his descriptions, as well as in the reality—the charming isles, the rugged slopes of the western shore, and in many other things around me. The voyage was interrupted several times by a brief chase—of course, an unsuccessful one—after an otter. We had more luck with the great white herons. These are the most attractive figures among the scanty water-fowl of Lake Kiwu, and as they are not hunted by the natives, they are not so very timid. If you see one of these striking birds proudly strutting along the banks, you may safely count it as spoil. With this exception we saw few other water-fowl during our several trips on the lake; one or two seamews and cormorants, grey herons, fox-geese and ducks, but all of them singly. This is a striking phenomenon when compared with the profusion of birds on other African lakes. It accords entirely with the generally accepted fact of Lake Kiwu's poverty in



**IN THE VIRGIN FOREST, KWIDSCHWI
(TREE FERNS)**

animal life. I harboured some slight doubts as to the correctness of Kandt's assertion that living shell-fish were entirely non-existent in this great water-basin, but I must entirely confirm his statement. I can even go further, and say that other animal forms commonly found in our waters, like spongillæ and moss animalcules, were not to be seen. To speak candidly, however, I must maintain my doubts as to the accuracy of Kandt's statements regarding the presence of medusæ in Lake Kiwu. Until quite recently medusæ were only known as inhabiting sea-water, it therefore caused much sensation amongst zoologists when it became known that the famous African explorer, Dr. Richard Boehm, who succumbed, alas, later, to fever, had discovered medusæ in Tanganjika. It was assumed from this and from certain other peculiarities of the fauna of the lake that there had formerly been a connection between it and the sea. If the same important conclusion could not be deduced from the existence of jelly-fish in Lake Kiwu, it was at least of much interest. In the meantime I must repudiate it so far as Kiwu is concerned, for we never observed these creatures either on our daily journeys nor during our month's stay at Kissenji, where we often met strong sea-breezes. And as Kandt declares that he only saw these *acelephæ* (about the size of beans) once, in two species—which does not coincide with the ordinary appearance, in shoals, of these organisms—I cannot but think that in this particular case the excellent observer was at fault.

The smallest living denizens of the sea, the plankton organisms, were exceedingly numerous but extremely uniform. They are, in fact, almost entirely *copepoda*, microscopical crustacea. The number of fish in Kiwu is far behind that of other African lakes, and, as regards species, there are hardly more than ten in the lake—this is a striking fact. These ten species are divided into four families only, in which the *cichlidæ* are best represented. The edible fish attain the size of a medium carp. They are valued by the natives, and are caught principally in baskets.

Our journey from Wau to Kwidschwi led us close along the

west coast, which is grown over with low, dense virgin forest, the green monotony of which is occasionally broken by a few phoenix palms, presenting a pleasant change to the eye. The splendid big turacou, the typical bird of Kwidschwi, and hosts of grey parrots stirred and rustled the tree-tops. About two o'clock in the afternoon we found a suitable landing-place in a deeply indented creek. One or two natives stood on the shore gazing in amazement and fear at our approaching flotilla. They did not await our landing, however, but disappeared headlong into the scrub. Then our rowers leaped into the shallow water, as if at word of command, sprang on shore, and gave chase to the fugitives. It was not long before they returned, laughing and chattering, and bearing with them goods which had been thrown down by the other natives in their flight. They appeared to expect praise for their heroic deed, and were, therefore, rather astonished when we gave them a few cuts with our sticks, and ordered them to replace the stolen goods whence they had taken them as speedily as possible.

The next morning we journeyed farther south to try and discover a suitable opening into the forest which covers the central part of Kwidschwi. It begins sporadically on the banks and rises, at its highest point, to about eight hundred metres above the level of the lake. We intended to do some collecting in this totally unknown virgin forest in order to be in a position to compare it with the Rugege forest, and also the Congo forest, which we had yet to explore. The island is about forty kilometres in length and some fifteen kilometres across at its broadest point, and is half covered with a forest of lofty trees. The rest of it is, relatively, cultivated arable land. After a four hours' journey, we arrived at a broad bay. The shores were thickly vegetated with banana, pea, and bean fields, and not far away lay the forest. A mighty umbelliform acacia near the bank appeared to invite us to pitch our tents, and the forest looked easily accessible from this point. Grawert had recommended Tamate to us, the subordinate chieftain of the Niamischi province, as being a suitable intermediary when negotiating

with the natives, so we sent off a boat at once to bring him along.

The natives of Kwidschwi are much shyer than those of Ruanda. In consequence of repeated attacks made upon them by the Watussi, they regard all arrivals with mistrust. Their numbers are estimated by Kandt at about 20,000, and are believed to comprise all the sea-dwelling tribes, whose members look upon the island as a harbour of refuge for those who, for some reason or other, are weary of their homes. Kwidschwi was still a province of Ruanda during the rule of Luabugiri, Juhi Msinga's predecessor, but freed herself from the oppressive yoke of the Watussi after the death of Luabugiri, and is now an independent sultanate, under the sovereignty of Mihigos. The latter avoids contact with Europeans, and all negotiations with him have to take place through his subordinate chief, Tamate. The islanders are diligent husbandmen, but possess little live stock. It is stated that the Watussi robbed them of it—at least, they say so. Although possessing the sturdy muscular physique of the Wahutu, they are easily distinguishable by their striking head-dress. The characteristic half-moon shaped coiffure worn by the Wanjaruanda is not usual there. In its stead a long hair plait stands out in sharp contrast against the shaven temples and occiput. The style of their huts and clothing, especially as regards the women, is similar to those of the Wahutu. We discovered many little hamlets hidden away in banana groves in the neighbourhood of our tents. At first their inhabitants concealed themselves from us, and the doors of the huts were carefully barred, but they soon became more trustful. Our occupation of collecting all kinds of small creatures and plants certainly aroused their wonder, but did not serve to convince them of the friendly character of our visit. Three or four days after our arrival I was passing a village, when the senior villager approached me and said, "Jambo mami" ("Good day, gracious sir"), striking his left thigh and his forehead with his left hand, and stretching it out to me. A jug of *pombe* and a bunch of bananas were then brought to me as gifts. These were accepted,

with my best thanks, for distribution among my people. More friendly relations now set in between us and the islanders. They daily brought us a few bunches of bananas and some fowls, and received stuffs and beads in exchange. They also served us as guides upon our excursions into the forest.

This was more difficult to reach from our camp than had appeared, for it began some hundred metres or so above the banks of the lake. An extremely steep and slippery path led up to it over clayey soil made soft by the rain. Out of breath and dripping with perspiration, we got to the edge of the forest, convinced that it would not be possible, as we had hoped, to set up our camp there. The Kwidschwi forest is very beautiful. High-standing trees, chiefly *parinarium* and *sapotaceæ*, many liane, and most luxuriant brushwood make it almost impossible to swerve from the narrow path which penetrates deep into the forest. When chasing the long-tailed monkeys, which the natives say are the sole larger mammals of the island, I learned to know that forest. Monkey hunting is without doubt one of the most difficult tasks that confronts the zoological collector in Africa. The animals are very timid, and conceal themselves in troops amongst the loftiest tree-tops, but often betray themselves by their restlessness and their characteristic harsh cries. Then the question is how to get within shooting distance. Through the densest underwood you go, up the steep slopes, and down them, with arms and legs caught by thorns and liane, or with them clinging round your rifle and your neck. Creeping slowly on all fours through the tangle, perspiring and covered with dirt, you stand at last, with a racing pulse, at the foot of the tree you want; but the noise made by your stalking has scared the monkeys away some time ago. The direction in which the troop has fled is only indicated by a rustling in the branches of some neighbouring trees. This happened to me repeatedly during the first few days of our stay at Kwidschwi, so that I quite lost heart. I could only set all my hopes on the Batwa, the famous pygmy hunters, whom Tamate had promised to bring along.



MUTWA OF KWIDSCHWI



BATWA AT KWIDSCHWI (DR. SCHUBOTZ IN THE CENTRE)

The subordinate of Mihigo had in the meantime paid us a visit, accompanied by two followers. He was of medium stature, slender, and very scantily clothed, yet he created an impression of intelligence and complaisance. But of the dignity which compelled respect, and which is met with in the person of the chief of Ruanda, he had none. When I told him of my hunting troubles, he promised that the Batwa, who dwelt somewhere in the interior of the island, should be fetched. They were the only folk who understood how to capture the cunning and timid monkeys. The following day they appeared, amid the yells of our people, who were no less curious than we ourselves to meet these strange guests.

We had come upon their traces for the first time in the Rugege forest. Whilst stalking before sunrise one morning I stumbled across a small encampment of them, but they had perceived me long before I had caught sight of them, and had fled into the forest like wild animals. That gave an opportunity to my Mtussi guide to relate to me all kinds of fables concerning them and their method of existence, so that since then they appeared to be shrouded in mystery, which raised them to a position of fear and dread amongst our followers. Their appearance consequently disillusioned us. Personally I had imagined them to be smaller than I actually found them. Their height ranged from between 140 to 160 centimetres, but they were always conspicuous among the other Kwidschwi-folk for their smallness and daintiness. The colour of their bodies is exactly the same dark-brown tone as that of the islanders. Their faces are uglier, however; their noses flatter, and their skulls apparently rounder. Whether they should be looked upon as dwarfs or as small negroes is a question of no import. It is certain that they form a separate foreign element among the inhabitants of Kwidschwi, and probably wandered from the west, from the Congo, and mixed very little with the aboriginals. The bodies of the Batwa are well built and muscular, their only wearing apparel consisting of an apron of cowhide. But every one of them, like the Wanjaruanda, carries a tobacco pouch round the arm or

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shoulder plaited out of grass-stalks. The only weapons we observed were spears, having fairly long lancet-like blades. I have little doubt, however, that they also possess bows and arrows, only that they are not in the habit of always carrying them. The demeanour of these pygmies was shy and hesitating, and we were only able to come to any understanding with them through Tamate's mediation. After we had gained their confidence, by making them some small presents, they declared themselves ready to hunt monkeys for us, but could not be induced to go on the hunt with me, because, as Tamate said, they were afraid of the crack of my gun. Then for four days I neither saw nor heard anything of them.

Meanwhile we undertook long excursions in the forest, and followed a path which was good going at first, but which, as we penetrated deeper, became narrower and narrower, and finally lost itself entirely in the bush. By far the most attractive phenomena in the whole green shrubbery presented by the African virgin forest are the tree-ferns which are found chiefly in clumps close to small watercourses. They are perhaps the most beautiful children in Africa's flora; with their slender stems, ten metres and more in height, and beautiful crowns, they are more like palms than ferns, and no layman would recognise in them a relation of our common bracken fern. The luxuriance of the undergrowth corresponded with the richness in species and variety of the lower animal world. When I sent my guides and "boys" along to collect *wadudu* (insects—in a broader sense, small animals) my time was fully occupied in separating the valuable from the useless specimens from the abundant supply they brought. Earthworms of more than forty centimetres in length, and fully as thick as one's thumb (*Benhamia spec.*) were extremely common; earth-crabs, snails, with and without shells, too, were gathered in large numbers without any trouble. The most striking feature, however, was the wealth of butterflies in this forest. As they are usually associated with tropical plants, I had been astonished at the small part they had played hitherto in the country we had traversed; in the steppes, forests, etc.,

they had been conspicuous neither for their rich variety nor for the beauty of their colouring. I was therefore all the more pleased to find my original conceptions of tropical butterflies realised to some extent in the Kwidschwi forest. Large wonderful *papilionidæ*, *nymphalidæ*, etc., fluttered in the moist sand on the edges of the rivulets which crossed our path and enchanted us with their glorious, delicate metallic gleaming colours (*Salamis macardii*), or their creamy velvety black wings decked with striking green or bronze golden hues (*Papilio phorcas* and *mackinnoni*). Others, again, offered exceptional interest through their strongly developed mimicry, like the common *Kallima rumia*, which, when resting on a branch with wings folded, is very difficult to distinguish from a dry leaf. In these spots, too, away from the native villages, the monkeys showed themselves less timid, so that, after all, we managed to secure a few of them without very much trouble. They were greyish-green in colour, with deep black heads and hands. Strange to say, they appeared to be identical with a variety (*Cercopithecus Stuhlmanni*), hitherto found only on Mount Ruwenzori. This was a curious coincidence, as the Ruwenzori chain is two hundred kilometres distant from Lake Kiwu, and separated from it by a region exhibiting entirely different conditions of life from the slopes of Ruwenzori and the islands and banks of Lake Kiwu.

One day the pygmies came into camp bringing their booty, a live, full-grown male monkey. They had carefully shut it into a hastily woven basket. Our attempt to keep the animal alive failed through its savageness. It behaved in a most furious manner, and, attached to the cord which we had placed round its hips, it made such mad leaps and dashes that it injured itself internally and died. Unfortunately we were unable to learn how the Batwa had caught him. One could not ascertain anything from them by direct methods. Tamate maintained that they teased the monkeys by yells and noises and arrow-shots from tree to tree, until they sprang to the earth and could be captured. One day, when returning to camp, I heard

loud noises going on in the forest, which my people said were being made by the Batwa hunting the monkeys. Yet I am unable to give credence to the tale that these animals can be hunted down from their trees by means of noises, and fall in such a state of exhaustion that they allow themselves to be caught in nets. I am more inclined to think that the loud cries of the hunters are intended to drive the animals into traps and snares previously set up.

Our stay at Kwidschwi came to an end sooner than we could have wished. We should have had plenty of material to work upon even if we had remained there for many weeks, or even months. But the comprehensive programme which was awaiting us in the volcanic region did not permit of our remaining more than fourteen days amongst the islands of Lake Kiwu. We parted most unwillingly from this paradise. Even though our daily labours were rendered onerous through the toils and hardships encountered in penetrating the dense forest, we were richly compensated by our spoils. And then, too, the agreeable climate was exhilarating to a high degree. Our Celsius thermometer registered 20 to 25 degrees at noonday, and the nocturnal cold, from which we had to suffer bitterly at times elsewhere, was lessened by the vicinity of the great stretch of water. At night, after our meal, we used to sit a long time in front of our tents, chatting over the day's events, or lost in thoughts of our distant home. The letter which follows, written by one of our number on his receiving news by the European mail informing him of the approaching wedding of a lady relative, which news, as chance had it, reached Kwidschwi on the very wedding-day, gives some little idea of the beauties of a tropical night and the mood it calls forth.

"I received your letter just in time to avoid letting Käthe B——'s wedding-day pass by unwittingly. We will hold a banquet this evening in a *salon*, in contrast with which the 'Kaiserhof,' or wherever else you may be celebrating the fête, in Berlin would pale. Our *salon* is tremendously broad. It is

bounded by the blue Congo mountains, ten kilometres away, on the west, and yet which appear so close in the rarefied air that it seems one could almost touch them. Before us to the east and north our eyes rest on the dark primeval forest of the island through which we, the first Europeans to do so, have roamed during the past six days. The boughs of a mighty acacia tree form a beautiful canopy over our heads under the deep blue African heavens, and leave a gap just large enough for the moon to shine through and illuminate our festive board. By a lucky coincidence the moon is very nearly full to-day, and she shines as I have seen her do only on very cold nights at home. We have music also, certainly not in the shape of a Hungarian band, but one scarcely inferior. Myriads of little crickets and grasshoppers, sitting in the reed-beds along the banks of the lake, strike up a concert as if hosts of tiny smiths were smiting anvils with silver hammers in the womb of the earth. So I would not exchange the glorious African splendour for the gaieties of Berlin. It is only the friends feasting there whom I would dearly like to see. Possibly one or other amongst them may now and then give a fleeting thought to the most distant corner of the Dark Continent. Wishes for their constant well-being shall be rung from our goblets to-night, which, although only made of enamelled tin, shall be filled with good Moselle. But in particular we will drink to the bridal pair, for whom we wish to-day to be a day of joy and the beginning of the highest happiness. Menelik, our mess boy, has just come up and called out, "*Chakula tajari*" ("Dinner is ready"). We are to have soup with vegetables, baked Kiwu perch, and wild duck. Then butter and cheese, coffee and cigars. Not at all a bad bill of fare."

That was our last evening on the island of Kwidschwi, and a right merry one it was. The charms of the tropical night combined with the "Brauneberger" to unloose the tongue of our quiet botanist, and betrayed him into pouring out generous effusions from his rich store of poems. When at length we retired to

rest—long after midnight—we still heard ringing from his tent
the refrain :

*"Füllest wieder Busch und Tal
Still mit Nebelglans,
Lösest endlich auch einmal
Meine Seele gans."*



NINAGONGO, FROM THE NORTH

CHAPTER VI

IN THE VOLCANIC REGION

THE Virunga volcanic group rises up like a mighty barrier 4,500 metres above sea-level, from the bottom of the great Central African rift-valley, that vast depression which stretches from the southern end of Lake Tanganjika over Lakes Kiwu and Albert Edward to Albert Nyanza. There are eight gigantic volcanoes, or earth upheavals, which bear testimony to the mighty subterranean forces concealed in the womb of the earth. Dauntlessly their colossal forms tower up to the skies, and not infrequently one sees the dazzling snow on their highest peaks gleaming under a tropical sun.

The summit line of the volcanoes forms the natural northern boundary of the German province of Ruanda, and it is to be hoped that before long, and definitely, it will also mark the political boundary between this part of German East Africa and the neighbouring Congo State. German enterprise and German exploration work have opened it up to the civilised world. It was for the sake of the Virunga volcanoes that Count Götzen undertook his expedition right across Africa in 1893, and this journey led, as mentioned in the previous chapter, to the discovery of Lake Kiwu, and also brought us the first accurate information concerning the volcanic area in its northern section. Our knowledge of this part of the country has since been increased and supplemented by the work of the German Congo Boundary Expedition (in which undertaking Captain Herrmann represented Germany's interests), by Dr. Kandt's meritorious exploring work, and by the journeys of investigation made by German officers like Bethe, von Beringe, von Parisch, and others.

Yet the Virunga volcanic region still remained a *terra incognita* in many respects, and it was not possible that it should be otherwise. The animal and plant world, and more especially the geological conditions, concealed many problems not yet solved. And thus a great deal of work had been left here for our expedition to accomplish. We now set ourselves to attempt a solution of these open questions, by thorough expert investigation and systematic work.

I must decline in this place to handle exhaustively the subject of the results of our explorations in the volcanic territory. They may be left for discussion in scientific treatises. The chief object of the following pages is to present to the reader in broad and general outlines an intelligible picture of the volcanoes and of their neighbouring territory round Lake Kiwu, and to afford him an impression, if only a fleeting one, of the mysterious sway exercised by the subterranean powers visible in the great Central Africa rift-valley, without doubt one of the most stupendous excavations in the earth's surface that is known.

A glance at the map shows that the Virunga volcanoes may be separated into three clearly distinct groups: a western, a middle, and an eastern group. The western group, by far the most interesting, is the scene of the most recent volcanic out-breaks, and comprises Mounts Namlagira and Ninagongo, which are still active. The eastern and central groups, on the contrary, are each composed of three extinct volcanoes. The middle group contains Mikeno, Karissimbi and Wisoke; whilst the eastern one is composed of three volcanic cones, Sabinjo, Mgahinga and Muhawura, the last of which is visible in clear weather as the most eastern extremity of the Virunga, and can be seen as far away as Karagwe and Ankole.

The nearest volcano to Kissenji is Ninagongo, the base of which may be reached in a three-hours' march. The way thither is not particularly charming, as it winds through an unbroken line of fields. At the foot of the mountain their number was still so large that we had trouble in finding a free spot in which to pitch our tents. But Kissubi, the black guide, who attached



AT THE FOOT OF MOUNT NINAGONGO



VIRGIN BUSH FOREST IN AN OLD CRATER



NINAGONGO SEEN FROM MIKENO AT A HEIGHT OF 3,000 METRES

himself to us, knew his business and conducted us to a spot where other tents had stood before ours. Since the first ascent of Ninagongo by Count Götzen in the year 1894, Kissubi's services have often been requisitioned. The proximity of the military post of Kissenji on German, and of Ngoma and Bobandana on Congolese, territory has brought about a relatively frequent ascent of the mountain.

The principal peak soars up in strong relief against the cloudless heavens, blunted at the top and typically conical in character, and is flanked on the north and south by lower-lying craters. Whilst the northern and southern craters have long been extinct, and are wooded to the top, the main middle cone gives unmistakable appearance of activity. The vegetation does not reach quite up to the summit, while beyond is barren lava and ashes, which in the course of time has developed into calcareous tufa.

The ascent was carried out with a limited number of carriers only. The little caravan toiled slowly along the narrow paths and through a growth of vegetation, which Captain Herrmann has termed virgin bush forest. It consists of a thicket of shrubs and trees of medium height, and is in places almost impenetrable. The lower part is dominated by a growth of even-branched *acanthus* bushes, about six metres in height, bearing large, soft leaves, belonging, perhaps, to the genus *Mellera*. Further up Mildbraed observed a small bush-like *dracena* appear very frequently. Great trees with tall trunks grew isolated here and there.

After passing the forest we reached a region of cammock. A mass of bushes and shrubs, hardly the height of a man, with rod-shaped branches, grow crowded together. The very uniform style of this rod-like growth creates a somewhat monotonous impression, in spite of the wealth of species met with. It is worthy of mention, as Mildbraed points out, that here the heaths do not play so important a part as usual in African brushwood. On the lower line of the region *Erica arborea* are found, and on the upper *Philippia Johnstonii*; but the greater portion of the

vegetation consists of *senecio* and *conyza* species, with grey-green foliage. The bushy *helichrysum*, with yellow-white and silvery pink immortelle blossoms, adorned the entire formation in profusion. In places where the bush grows less densely a lot of low shrubs have sprung up, which belong in part to species often met with at home: small blackberry bushes, clover, violets, and the umbella, *Sanicula europæa*. Then there are several genres of common orchids reminiscent of species found in our meadows.

Above the brushwood, which is representative of the sub-alpine region, come the "alpine" growths, with the most noted and characteristic plant of the East African Alps, the arborescent *Senecio Johnstonii*. Yet the specimens on the Ninagongo cone do not attain large dimensions, the better trees being found singly only lower down. They are strange growths. Imagine a stem about twenty centimetres in diameter, repeatedly bisected and trisected so as to form a crown built up candelabra fashion, and place at the ends of the heavy branches bunches of luxuriant, fresh-green, shaggy-haired tobacco-like leaves, the older of which hang down brown and withered. Then picture to yourself great pyramid-shaped panicles of yellow blossom-heads about a metre in height, and resembling somewhat the *Senecio paluster*, growing out of the clusters of leaves, and you may, perhaps, gain some idea of these *senecio* trees, which attain a height of six metres. On the Ninagongo cone these trees are only some two metres high, and decrease in stature as the summit is approached. A small kind of everlasting *Helichrysum Newii* and a beautiful ground-orchid, with dark rose-red blossoms, grow fairly high up. The lava in the upper part of the crater cone is as hard as iron, and has nothing but mosses, liver-wort and lichens to offer amongst its rifts and fissures.

The most characteristic point, according to Mildbraed, about the Ninagongo vegetation lies in the fact that all the formations are still in a state of development. The virgin underwood is still young, and will, some time or other, doubtless be supplanted by bambubaceous and other foliaged trees. The *ericaceæ*



CLOUD FORMATION ON THE SUMMIT OF NINAGONGO



THE COUNT GÖTZÉN CRATER OF NINAGONGO

may, perhaps, later oust the smaller *senecio* and *conyzæ* species, whilst the *Senecio Johnstonii* may spread over the whole cone up to its summit. Later on the larger stalked lobelia may make its appearance.

After a toilsome ascent of three hours' duration, we set up camp about 500 metres below the peak, in the saddle between the middle and the south crater. We were surrounded by a dense mist, which obscured our view of the summits. We had hardly fixed the last tent when a storm broke over our heads, accompanied by a tremendous shower of hail, which quickly transformed the aspect of the scene into one of winter. The temperature sank correspondingly rapidly, and the cold was so severe that the poor carriers crowded into the cover of the tents for protection against it. Then the heavens suddenly cleared, and the summit of the volcano stood out in splendid relief, like a dark silhouette against the passing clouds. We had profited by our rest to make a scanty meal, and at once set about attempting the ascent to the summit. The slope rises at an angle of 35 degrees, and the climb was rendered exceedingly arduous in consequence of the slight foothold afforded by the stony ground. Moreover, the unaccustomed rarity of the air made itself oppressively felt, so that one was compelled to stop still nearly every hundred paces and breathe heavily, whilst one's heart beat audibly. Had we conceived any idea of the picture awaiting us, however, we would have hurried more. For in a few moments we were gazing down speechless into a colossal arena indescribable in its grandeur.

The flattened summit of Ninagongo is almost entirely occupied by a mighty and nearly circular eruptive area, the Count Götzen crater. I christened it thus in honour of its intrepid discoverer. The inner walls fall away steep below and terminate in an almost level lava bottom, in the centre of which two steep-walled eruptive shafts have been blasted out; these lie in juxtaposition, giving the appearance of a very large and somewhat flattened figure 8. The measurements taken by Lieutenant Weiss will best give an idea of the enormous dimensions of the Count

Götzen crater. According to these, the diameter measures 1,251 metres, the depth 155 metres, and the diameter of the two eruptive shafts 336 and 459 metres respectively. The spectacle presented by this gigantic crater is simply stupendous.

In Count Götzen's time, in 1894, Ninagongo was still in full activity, evidences of which were observable up to the year 1906. At the time of our visit the two shafts were perfectly quiet and peaceful. The numerous clefts and fissures on the floor of the crater, from which steam escaped, alone reminded one of the volcanic powers slumbering in the depths below. These may awaken to action any day, for, in Kirschstein's judgment, the apparent calm of the mountain in no way justifies the assumption that Ninagongo is to be counted amongst the extinct volcanoes.

The mountain is held by the natives to be "*wasimu*" (bewitched), and their legend has it that any who ascend it must perish. Only very few of the enlightened natives believe otherwise. Our Kissubi preferred to avoid risking the anger of the spirit of the mountain, and remained behind in camp. It was only later, when Kirschstein made the ascent, that he reluctantly decided to accompany him to the crater's edge. Yet Kirschstein was still to experience how far justified were the honest fellow's dread. He himself writes:

"... Anyhow, I have quite spoilt things with Kissubi. My amiable Ninagongo companion, Dr. Breuer, of Usumbura, must bear the blame, as it was he who inveigled me into firing off my gun, as he did himself, to test the remarkable echoes. It was in vain that Kissubi warned us that we would awaken the mountain spirit's vengeance. We laughed at him and his mountain goblins. A few weeks later I suffered the loss of half my caravan whilst ascending Karissimbi in a snow-storm. That, said my black carriers, was Ninagongo's vengeance. . . ."

The echo of a shot fired breaks—as I have myself experienced—a thousandfold against the rocks, and it appears as if the sound were raging round and round the crater walls incessantly, unable to discover a way out. No wonder, then, that the spirit of the mountain waxes wrathful. His name is Gongo. He is the chief



**SLAG "CHIMNEY" IN A LAVA FIELD, SOUTH OF
NINAGONGO**



BANANA LEAVES FOR CATCHING RAIN-WATER, NINAGONGO



IN THE VIRGIN BAMBOO FOREST

of all the spirits; the souls of all the dead go to him, and he allots them a permanent dwelling in the volcanoes. With Gongo live also the spirit Liangombe, his mother (Nina Liangombe), his father (Bawinga), and his grandfather (Njundo). Liangombe controls the souls of those who have wrought evil; he binds them and beats them. Namlagira and Mikenno are the sons of Gongo. Namlagira is said to have dwelt with his brother at first, but was driven out by him because he carried fire along, and thereby annihilated the water that existed on the mountain. Namlagira is stated, also, to have been at deadly feud with his father, Gongo. For a long time an indecisive battle raged, but Namlagira succeeded at length in cutting off Gongo's head at one blow, and that accounts for the flattened top of the mountain. According to a communication made to me by Captain von Beringe, from which I quote, every one of these spirits possesses his own priest, who lives at the foot of the mountain, receives the devotees, and communicates to them the spirit's will. The captain was informed that the position of such a priest was a very lucrative one.

We had hardly returned to camp when dusk fell, and heavy rain set in. So we had to make the slippery descent on the following morning with a temperature of only eight degrees. The peaks of Karissimbi and Mikenno, however, rose up resplendent through the veil of mist that hung over the valley and stood out in strong relief against the blood-red rays of the rising sun, gleaming and glistening in the newly-fallen snow.

At the beginning of September, Raven, Wiese and I, who had been joined by Grawert and Knecht, set out for the extensive district lying in front of the southern volcanoes, which is connected with them geologically.

On the next day, following a winding path, we reached the bamboo forests. Roaming for the first time in these forests has a peculiar charm of its own for a new-comer. These immense grasses which throw up their stalks, as thick as one's arm, to a height of seventeen metres, and which differ so utterly from our own vegetation, create such a strange impression that, at first,

new to such phenomena, we hardly observed the discomforts attending our march. We became aware of them before long, however, and the charm we had at first experienced was soon dispelled. The stalks are overgrown with long lanceolate leaves almost from the roots, which thicken up so much towards the top that the sun's rays can scarcely penetrate them. The ground remains so moist and slippery, in consequence, that travelling is rendered exceedingly arduous. In fact, after heavy rain, it is hardly possible to clamber up and down the steep slopes, the soil is so soaked and slippery. The safest way of reaching the valley is to set about it in the same way as the ski-runner does when rushing down to the bottom of a slope. Supported at the back by a long alpenstock, which may be cut from any neighbouring bamboo bush, and with feet placed parallel to each other, you travel down the mountain side, on what is at best a cattle-track, with horrible celerity. Herds of long-horned Watussi cattle, with their drovers, are constantly encountered in the forests, for the young bamboo shoots form the main nourishment of the beasts. They are either driven along daily from the neighbouring village, to graze there, or they remain for months at a time in the depths of the forest, in kraals specially constructed for the purpose.

After leaving the bamboo zone, on the 8th of September, we met with a charming travelling companion in the person of Rudolf Grauer, the Austrian explorer, with whom we were destined to pass through many a joyful and sorrowful hour. His name is familiar in connection with the earliest discovery of the Ruwenzori chain of mountains. He had arrived at Bukoba a few weeks before us with the intention of reaching Lake Kiwu by a different route from the one we were intending to take. His valuable collections, which were limited at first to ornithological material, extended later to the mammals. In fact, he was successful in securing twelve gorillas, which had been captured by the natives in the marginal mountains of Lake Tanganjika.

As Grauer was also contemplating pitching camp, we marched on a little further over the jagged, difficult lava which covered



LAVA CAVES



SENECIO, ERICACEÆ, AND IMMORTELLS ON NINAGONGO



MOUNTAIN FOREST AT KAHAMA
HAGENIA IN THE FOREGROUND

the whole district, and encamped in the neighbourhood of Lake Karago, in the province of Kahama.

The lava crust on which we were advancing originated from the volcanic eruptions of comparatively earlier times, but is not so old as to have fallen into complete disintegration, as it has done in many other parts. Where this, however, has happened, the ground has been rendered exceedingly fertile through the formation of vegetable soil, and is most industriously cultivated by the natives. *Shamba* after *shamba* are to be seen in unbroken succession, on which bananas, negro millet (*mtama*), sweet potatoes, maize, peas and beans are grown. In Kahama one could clearly discern the detached lava streams and the manner in which they had once poured themselves devastatingly over the land.

Spacious caverns formed under the crust of the lava streams, and have remained to the present day. We searched around for them, and crept into some of them so as to inspect the interiors. The entrances mostly lie concealed under shrubbery, and it occasionally takes a long time to find an opening. These caves served the Wanjaruanda* not seldom as secret lurking-places. Even as late as 1906 Captain von Grawert had arrows showered upon him from the mouth of one of these caves whilst engaged on a punitive expedition in those parts in consequence of rebellious conduct. The hostile demeanour of the people has now given way to one more peaceable, and since then these cave formations have but rarely been used as entrenchments.

Having separated again from Grauer, who proceeded on his way to Lake Kiwu, we crossed a few heights and made some steep descents on our way to the old lava streams, which were visible far away. The journey was, if possible, still more difficult and disagreeable than that of the previous day, as the lava had in parts congealed in a most serrated and jagged fashion. The sharp edges and pointed ends were particularly disastrous to the carriers. Their wounds had to be treated, and this delayed the marching to such an extent that the caravan became quite

* Inhabitants of Ruanda.

broken up, and took seven hours to reach its destination, arriving in a completely exhausted condition. The position of our haven of rest, however, soon made us forget the discomforts of the forenoon, for a few paces from where the tents were pitched we discovered a mineral spring oozing in beautiful little bubbles from the earth. Only those who, for months at a time, have had to drink water of dubious character, which has to be boiled or filtered daily, or who have manufactured a more than questionable preparation with the aid of a gasogene, can form any idea of our delight on finding this crystal-clear beverage. Everyone flew to enjoy it, and we could hardly drink enough of it. At first the "boys" and carriers regarded it with rather a sceptical gaze, but after we had given it a trial they imitated our example with avidity.

As the spring was situated a very little distance away from the mission station of Ruasa we had the pleasure next day of seeing Dr. Czekanowski, who had been working there for some time and had learned of our arrival. He came by way of the heights which bound the valley in the east, accompanied by Brothers Dufays and Loupias. Soon afterwards Lieutenant Knecht also came in and joined us for the further march to Lakes Luhondo and Bolero.

We started next morning whilst it was still dusk, and as the rim of the sun's orb peeped curiously over the edge of the mountains we suddenly caught sight of the deeply indented fiords of Lake Luhondo gleaming in the early light of dawn and wrapped in a light fog.

Higher up to the north-east lies Lake Bolero united to its sister lake by a splendid cascade which tumbles down with a rushing fall over the steep mountain wall from a height of over a hundred metres. The banks of both lakes are thickly populated, and agriculture is diligently carried on in every direction. We also saw once more a great number of banana groves, a sight we had missed since leaving Kissenji.

The two lakes are of interest zoologically in the fact that no fish at all exist in the upper of the two, and only barbel an



A ROUGH WAY OVER THE LAVA



LAKE BOLERO



THE MKUNGWA CASCADE

inch or so long can be found in the lower. On the other hand clawed toads (*Xenopus spec.*) are uncommonly numerous in both lakes; they serve the people as food and are to be met with in large quantities in all the huts, packed into baskets, alive and dead. I found, too, a heap of wooden staves, about half a metre in length, between which the toads were squeezed to dry them, lying under one another, parallel, in twenties. Near by I found a busy hive of snare-basket makers fashioning pots for catching prawns. These little crayfish (a species of *caridina*) are found in large numbers in the lower lake, and the lake-dwellers have a great partiality for them. Lake Luhondo abounds in reeds and rushes, and its surface is enlivened by a large variety of ducks.

As we stayed there for several days we had some time to devote to ethnographical study, and were able to supplement our Ruanda collection very considerably.

The inhabitants on the borders of both lakes are of a fractious disposition and give the Residency a good deal of trouble. The Resident, therefore, has to keep a watchful eye on this district, and has often been compelled to resort to energetic measures in order to maintain the authority which it is imperative to uphold.

The boats used on the lake are built very low, and are very fragile, with practically no gunwale. Great care is therefore necessary to retain the balance. Raven met with a very unpleasant experience in this respect. Whilst shooting at a duck he lost his equilibrium, and capsized with his gun, cartridges and oarsmen. His rain-cloak, however, which was made of "continental" balloon material, kept him afloat on the water, and blew out like a bell. The rifle, which lay softly embedded in the slimy bottom, was brought to light from the watery depths with miraculous swiftness by the skilful diving of his oarsmen.

Unfortunately Grawert took his leave of us here in order to return to Usambura on receiving news of the illness of one of his officers. It was with deep regret that we saw him depart.

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The support he had afforded us, the solicitous care with which he had smoothed our way, the circumspection with which he had provided for our commissariat, had conduced in no small degree to lighten our laborious task and to promote the success of our expedition.

Soon after, we paid a visit to the mission station at Ruasa, which impressed us as being very well cared for, cleanly kept and tastefully laid out. We were received in a very friendly manner and treated to such excellent dishes and beverages that it needed some little effort to make our way back to the camp along by the pretty falls of the Mkunga.

Knecht having returned to Kissenji, we turned to the north with the purpose of fixing some settled quarters on the high-lying saddle between the volcanoes of Sabinjo and Mgahinga. We followed a long upward inclining road. The temperature, which had been high at the start, sank gradually as we ascended. Ever since noon a pelting rain had been pouring down, which turned the path into a mountain torrent, and at the finish it grew so cold that we were well-nigh frozen.

As we did not know where Weidemann—who had marched here with reserve stores direct from Kissenji—had pitched his camp, a patrol was despatched to search, and to advise us by signal gun when the camp was sighted. The rest of us, when we had reached the thickly wooded saddle, crowded together, black and white alike, around a smouldering fire until the appointed signal relieved our suspense. A further march of half an hour brought us to our destination.

Weidemann had been encamped for two days in a forest glade, and had already had the foresight to erect a protecting *banda* (roofing) of bamboo, which proved of great service to us, for during the following days the thermometer never indicated more than 13 degrees Celsius, even at the warmest hour of the day, and sank at night to one degree or even to freezing point. In addition to this a cutting wind whistled through the valley, chilling us to the marrow, and one night even swept Wiese's tent away. We were at an elevation of 2,600



THE MKUNGWA FALLS



ANOTHER VIEW OF THE MKUNGWA FALLS

metres, and the white frosted meadows in the early morning conjured up the vision of a German autumnal landscape. At the evening meal we always appeared in thick coats and turned up collars, and with steaming glasses of grog in our hands we resembled a polar expedition rather than a party of African travellers.

Among other zoological investigations the task which mostly engaged our attention was to find and, if possible, to kill an anthropomorphous ape. Up till then there had been only one species of man-ape known to have been secured from the Kiwu district, the one killed by Captain von Beringe on Sabinjo, which the Berlin Zoological Museum pronounced a gorilla. It was obvious, therefore, that the capturing of further specimens would be of high scientific value in settling the question as to whether still further species of the anthropomorphous ape existed in that part.

The forests round us consisted mainly of bamboo, which may be met with up to an altitude of 3,400 metres. The gorges and ravines clothed with foliage and brushwood are the lurking places in which that rare and much coveted wild creature, the gorilla, makes his lair. It is an extremely difficult matter, and occupies a great deal of time, to get to such spots, and entirely excludes any other object from our expedition. We did not have the good fortune to fall in with the desired prize although we found droppings and fresh tracks.

Farther on we came across many elephant trails, up to astonishing heights, and this fact gave reason to suppose that we had struck a new species of genuine mountain elephants. The natives confirmed our views, assuring us that the elephants thereabouts always kept to the mountain slopes and never shifted their quarters down to the plains. We tracked them to heights of between 2,200 and 3,400 metres. On one excursion to the Mgahinga crater we, in fact, espied five of the pachyderms crossing a bare part of the forest below us. This troop approached our camp in the evening in the full moonlight and startled us at our meal. We heard the cracking of the bamboo

stalks getting gradually nearer, and expected every moment to see the elephants appear in the clearing, but in vain. During the night, however, one of them burst noisily past the camp not a hundred paces away.

I determined to try my luck the next morning. Setting out, clad in a thick hunting jacket, I found the grass again frosted, and it required a very short search to locate the fresh tracks of the elephants in the long meadow grass below the camp.

What contrasts life offers us! An elephant hunt on frozen ground! My mind carried me back to a day, almost to the exact time of the year, when I had hunted a fine rutting stag amidst the September scenery of Hungarian mountains, accompanied by similar cold.

We now picked up the trail on the frosted, crackling meadow, and it led us, without perceptibly rising, to the southern slope of Mgahinga through a glorious leafy wood where the morning sun's rays played on the tree tops, and the long drooping creepers lost themselves in the underwood.

From a little distance away we heard the chewing of the browsing beasts. The brushwood where the herd had passed was trampled down in broad tracks. This served as a sure sign that the elephants, who were still busy feeding, moved along but slowly. We crept on now with hearts beating somewhat higher and with extreme caution, avoiding every thorn and sprig and clambering noiselessly over broken boughs and twigs. The elephants could scarcely have been fifty paces away from us. Suddenly something crackled at my side, and stepping out from behind a bush I almost knocked up against an elephant, but alas! going straight away from my gun. He must have noticed something, for turning sharply round he fled. My eye was soon searching for a good place to hit him and for rear and fore-sight of my rifle, and as the colossus, with his tremendous ears flapping, trotted across a small glade, I fired a ball obliquely, just behind the ear. He fell without uttering a sound, and hurrying up I found that he was dead.

Whilst still lost in contemplation of the mighty creature,



WATERFALL BETWEEN LAKES BOLERO AND LUHONDO



ERECTING QUARTERS ON THE PLATEAU BETWEEN SABINJO AND MGAHINGA

I heard a sudden noise close behind me. All my followers immediately fled behind the protecting bushes. I naturally followed the new *tembo* (elephant) on the fresh trail. As, however, he appeared to be rushing on ahead and I anticipated a lengthy chase, I left the further pursuit to Weidemann, a guide and an Askari. I then sent word to the camp for carriers to come along and cut out the tusks and carry back the flesh of the dead animal for our people. Then I turned back for my prize, but, strange to tell, I could not find him. My "boy" and a carrier searched in conjunction with me in vain for nearly two hours, although it subsequently proved that several times we were close to him. The similarity in the vegetation and the many fresh tracks always led us round in a circle. Realising the futility of this wandering I sat down on a fallen tree trunk and was devouring my breakfast, when I heard eight shots fired in quick succession in the direction of the last trail. It turned out that Weidemann had come up with his elephant, which had joined the herd, and had laid it low. It was a fine bull.

When the carriers arrived from the camp I set them skirmishing in all directions, and so at last we contrived to find the spoil for which we had been searching so long. Later on the skulls of both the elephants were carefully prepared and found their way to Germany, as well as a perfect hide. These trophies were the first evidences of the elephant race in volcanic regions which found their way to a German museum.

The bigger animal showed a height, measured from the back, of 3.05 metres, a meagre measurement in comparison with the powerful elephants of the plain who attain nearly four metres in height. The comparatively powerful tusks, which were 2.05 metres long, and the worn grinders pointed to a fairly good age and strengthened the view that smallness is a characteristic of the mountain elephant.

Amongst other animals found at the foot of the volcanoes, the lion is occasionally met. These, however, appear to be specimens that have wandered from the Rutschuru plain. Apparently, too, there are two species of leopards of different

sizes to be found. We caught one large specimen in a trap and discovered it to be identical with the species discovered by the Duke d'Abruzzi on Ruwenzori. Then there are wild cats and different kinds of long-tailed monkeys, of which the most common is the fine red and grey-green coloured *Cercopithecus Kandti*. We also found quite a new sort of bush-buck, one of which I shot in a forest glade close to swampy ground.

The natives' talk ran a good deal on a beast of prey said to be something midway between a lion and a leopard, and which the people called "kimisi." Up till now no European has sighted this creature: it would probably be some kind of large-sized wild cat.

Whilst in the district, Lieutenant von Wiese, accompanied only by an Askari and a native, achieved the distinction of being the first European to climb Mount Sabinjo. It is probable that no man had trodden the summit before, for Captain von Beringe, who in 1903 reached to within 150 metres of the peak, had to turn back owing to the steepness of the rock, whilst his companion, Dr. Engeland, had stopped at an altitude of 3,150 metres on account of an attack of vertigo. It would never enter the head of a native to undergo such a seemingly purposeless fatigue, which, according to his faith, would serve only to draw down the wrath of the mountain spirits. Kirschstein also ascended Sabinjo later, right to the summit. On that occasion he established the fact that the geological character of the mountain had up to that time been entirely misunderstood.

"Sabinjo," writes Kirschstein, "is not, as reported by von Beringe and Herrmann, the jagged remains of the wall of a crater which has been torn up in the east and west, but rather an old peak of trachytic-andesitic stone formation, deeply eroded—a homogeneous lava cone. In contradistinction to the stratified type of volcano, made up of overlying layers of ashes and lava masses, like Ninagongo, with broad crater summits, no loose volcanic matter plays any part in the creation of such masses as Sabinjo. Sabinjo owes its existence solely to a consistent flow of lava. The viscous fluid, a stony, yet paste-like



THE CRATER OF MGAHINGA



SABINJO, FROM THE SOUTH

mass gushes out of the earth, and, flowing from the eruptive funnel, cools and congeals into a cone-shaped, craterless lava mountain. What Beringe and Herrmann doubtless took for crater walls are the broad V-shaped clefts, 'barrancoes,' as they are called, formed by erosion, which in the course of time cut deep into the core of the volcano. The gnawed appearance of the mountain has doubtless given it its name, for in the Ruanda tongue 'Sabinjo' simply means 'tooth.'"

After one more day's sojourn we bade good-bye to these cold but beautiful mountain regions, and descended valleywards. The lower we got the more noticeable became the heat, to which we had now become unaccustomed. Then we had to get used again to the heavy marching over the ragged lava, which caused many a sigh. Generally speaking we followed the course of the Mkunga, which flows later on into the Kagera, the chief river of Lake Victoria. The march through this valley offered us quite a pleasant change from the toils of the past week, and the merry singing of the carriers showed that they fully appreciated it. Well-cultivated plots covered the country round, provisions were in abundance, and the demeanour of our over-fatigued followers soon altered for the better. We could hardly gaze enough at the glorious scenery. In the early mornings and late in the evening, when the vapours and mists floating down below us had dispersed, the peaks of the volcanoes, amongst them the snow-capped head of Karissimbi, stood out clear and sent a farewell greeting through the valley which lay shut in by the surrounding high mountain tops. The only difficulties which we encountered, and which considerably impeded our progress, were the number of marshy, boggy water-courses which we continually had to cross, and in which the animals sank knee deep.

We were not destined, however, to enjoy comfortable marching in the level valley for long. We had arranged a rendezvous at the Muhembe with the head of the Njundo Mission Station, Father Superior Barthélemy, who was intimately acquainted with the inhabitants and, in consequence of his long activity in

the land, had almost become their confidential friend. Barthélemy desired to escort us to the little tribe of Batwa in the Bugoie virgin forest. To accomplish this we had to traverse the perfectly unknown territory of northern Tschingogo, which was only indicated on the map by dotted lines in accordance with general conjecture. We had to select one of the large printed letters on the blank expanse shown on the map to mark our proposed meeting place.

As the course of the little river Mtashe appeared to run closely in the direction in question, we followed it up. This meant climbing over the western mountain margins of the valley. We came to a thickly populated, undulating hill country covered with luxuriant fields. The presence of Juwanese and Cambojano, the Watussi chieftains lent us by Msinga, inspired the inhabitants with confidence, so that we had no trouble in connection with the commissariat. Marching at the head of our caravan, their wide-ringing cries "*masimano, masimano, masimano*"* resounded in the hills and valleys, and were immediately answered by larger or smaller troops of natives who willingly brought along supplies.

Our calculations proved correct, for Mount Mhongo, where we pitched our camp, was, as a matter of fact, only a matter of two hours' distance from our comrade. On joining him we marched on at once to the edge of the forest, the exploration of which was the main task before us.

Anyone who is already acquainted with the flora of the country can, with the help of field-glasses from an elevated position, determine the character of the trees without any difficulty. We could discern the giant bamboo, the *Podocarpus usambarensis pilger*, called "umufu" or "musi" by the natives, and the sapotad *Sideroxylon Adolphi Friederici Engl.*, the "mutoie" of the natives. The podocarpus shoots up its straight, pillar-like stems to an immense height, particularly on the hill ridges, with a crown of knotted branches of picturesque beauty,

* *Masimano*, bring food!



SABINJO, FROM THE NORTH-EAST



BATWA, BUGOIE FOREST



BATWA HUTS ON THE MARGIN OF THE BUGOIE FOREST

bearing narrow, pointed, leathery leaves. The colossal stems of the *mutoie* are only seen on the valley slopes, reaching to a circumference of some five metres. At a considerable height they split into branches which bear a rich epiphyte flora. The tops are of a peculiar brownish colour as the leaves have a rusty reddish felt-like surface. A stately specimen of this kind was pointed out to us as the "sleeping tree" of the tschego or chimpanzee. The most common tree is, perhaps, the *Polyscias polybotrya* Harms., belonging to the araliaceæ, the "umungu" of the natives. Then there are also *Macaranga kilimandscharica* Pax—"mlala"—belonging to the euphorbiaceæ, and *Cornus Volkensii* Harms.

The tiny Batwa tribe live in this mountain forest, small in respect to physique, but not as regards their powers of propagation, for they populate the whole forest zone. In the territory traversed by the expedition three different families of Batwa became known to us. Besides those dwelling in the Bugoie forest, a second on Kwidschwi, the largest island of Lake Kiwu, and a third described by Dr. Czekanowski in the Ruwenzori chain.

At first all the Batwa were looked upon as belonging to the race of pygmies, but any general acceptance to this effect would be an error. "Mutwa" in the singular, "Batwa" in the plural, appear from Dr. Czekanowski's exact investigations to be the common designations for small men.

Measurements taken by Raven and myself, and others taken later by Czekanowski, of the Batwa in the Bugoie forest showed an average height of 1.60 metres. Some attained a height of 1.70 metres. A people possessing such an average height cannot therefore be esteemed pygmies. Czekanowski designates the Batwa of the Bugoie forest simply small negroes. In his opinion it is not exactly probable, though quite possible, that the ancestors of the Batwa were pygmies, and that their development has been influenced by intermarriage with the negro tribes. Reasoning from impressions received in a general way, I am inclined to support this theory, for the Bugoie tribe is entirely different from

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the genuine pygmy. To anyone who knows both races, to confuse them would be out of the question. The Batwa of Ruwenzori and of Kwidschwi are entirely different from the Batwa of the Bugoie territory. Czekanowski holds that the former are identical with the true pygmies, and I would maintain that this opinion should also apply to the Batwa of the island.

The Batwa of Ruwenzori and of Kwidschwi possess a height of about 1.42 metres, which they share with the pygmies of the Congo forest. Further, they show the typical distinctive marks of true dwarfs—the round head, the peculiar, penetrating, and unusually large eyes, and the very broad root of the nose—which betray to the expert their membership of the dwarf families.

The pygmies of the primeval forest differ from those of Kwidschwi only in the colour of their skin. Whilst the former are exceedingly light in colour, the Kiwu dwarfs have the dark complexion of the negro. Their complexions, however, may possibly be influenced by their different habits of life. The natives of Kwidschwi expose themselves a great deal more to the sun than their fellow-tribesmen of the Aruwimi and Uelle basins, who never leave the darkness of their native forest, and are therefore fairer in complexion.

The Ruwenzori Batwa, says Czekanowski, as also the pygmies of the Uelle and Ituri basins, speak the Balese language, and maintain that they possess none other. The Batwa of the Bugoie forest are conversant with the language of the Wanjaruanda.

The weapons of the latter race, which chiefly interests us at present, consist mainly of spears. They also use bows and arrows, the bow-strings being frequently made from the filament of the rotang palm. Like the pygmies, the Batwa exist almost exclusively by hunting and plundering caravans, and do not cultivate the soil. They claim to be very brave hunters, and to be able to spear without fail the buffaloes that lie in the bush after they have been stalked to within a few paces. They appeared to consider it a very impressive pose, just before we crept up to one of the very numerous buffalo herds, to plant one foot



PYGMIES OF THE CONGO VIRGIN FOREST



MUTWA WOMAN MARANGARA



BATWA OF THE BUGOIE FOREST

forward and shake their lance, which they hold pressed against the ground to test its elasticity. The nearer we approached to the buffalo, however, the lower sank their courage; and as soon as the herd—invisible even at a few paces distant, on account of the dense undergrowth—began to move, and the cane cracked all around us, the brave fellows vanished instantly out of sight and hearing. Some sought cover in the bushes, others bounded up aloft with the greatest agility, seized hold of a couple of bamboo stalks, and swung in the air with legs extended, graciously permitting the attacking buffaloes an easy passage below them.

The skill and celerity with which the Batwa can wind their way through thicket and creepers are amazing, and it is an exceedingly fatiguing task to attempt to follow them along elephant tracks and to the haunts of the buffalo. Their apparel—if it can be called such—a simple apron of beaten fibrous bark, offers no hold to the thorns, as the clothing of the European so constantly does. They are invincible opponents in the forest, their real home. Whilst marching out a little distance from the forest zone one day searching for fresh camping quarters, the Batwa suddenly declared that they could no longer follow us. No sooner said than done; they disappeared back into the forest, and we saw them no more till we again pitched our camp in the forest.

The chief leaders of the two tribes with whom we came into contact were Sebulese and Gunsu. On Raven's first visit the former had shown himself friendly, but Gunsu would not allow himself to be talked over even by Barthélemy. Gunsu had the reputation of being an exceedingly adroit caravan robber, and his people in consequence spoke of him in terms of great respect. A successful raid which he had carried out shortly before seemed to burden his conscience, and the mistrustful old fellow no doubt connected our visit with it. So we caused a message to be shouted through the forest that no harm should come to him, that we desired only to shoot buffaloes, and that their meat should be the spoil of him and his people. With the design of fathoming our intentions, he sent along his son into our camp, and his report

concerning us must have been favourable, for one day he put in an appearance himself, and thus for the first time came into close contact with white men.

The Batwa are anything but agreeable to associate with. Their indolence is sufficient to make anyone despair. Whilst later on the pygmies of the Congo forest were ready to act as guides at the slightest nod, the greatest exertion and sometimes forcible methods were necessary to get the Batwa away from their cooking-pots every morning. Contrary to the pygmies' custom, they never camped with our carriers, but built themselves huts at a little distance off.

The body measurements which Raven and I took were obtained with the greatest difficulty. The superstitious people almost trembled with fear when we fitted up our burnished measuring instruments. I believe that Barthélemy's presence alone prevented them from flight. The poor fellows almost thought they must die. "You won't die at all," intimated Barthélemy to them; "just come along." Then to prove the truth of his words I allowed myself to be measured by Raven. Seeing that I survived the ordeal, they appeared to grow more composed, yet I was not able completely to allay their mistrust.

The Batwa sat round resignedly. None of them came willingly, but every one had to be led singly by the arm to the "slaughtering" bench, the chest on which the measuring took place. At length came the turn of Gunsu's son. The poor fellow suffered tortures. He hesitated, but at last he stepped forward resolutely, and sat down on the chest with the words: "Well, then, it's all one if needs be that I die to-day!" But what a marvel! After the measuring was over, he stepped back safe and sound to his place. . . . So it was obvious that measuring was not fatal, but there must be something else. What are the *wasungu* (whites) writing down there? And what was one of them continually muttering, and what was his neighbour answering? Did the spell lie in that? Because it was quite clear that there must be some spell. Yes, it was certain that their lives were forfeit, and lay sealed in the white men's books and at



BATWA CHIEF, SEBELESE



NATIVE LEOPARD TRAPS

their sovereign will and pleasure. This view obtained credence more and more, and took such firm root in their minds at last that I feared that they offered up sacrifices of atonement to their deities for weeks after, so that they might be freed from the spell. This mad idea subsequently caused Czekanowski a great many difficulties when a special sociological investigation was undertaken.

Before closing these remarks on the Batwa I would like to mention a few of their names, which sound curious when translated. These are some of the meanings attached to them as Barthélemy told me: "Gunsu," for instance, is the name given to a species of jackal; "Sebulese" means foster-father; "Semisse," father-of-the-liane; "Luhango" means that he-is-born-from-the-river; "Bigirimana," he-is-with-the-deity; "Bitahungo"—a son of Gunsu—means I-do-not-flee; and "Semabi"—another of Gunsu's sons—his-father-is-dirt!

As already mentioned, amongst the larger mammals of the Bugoie forest besides the elephants there are buffaloes, the western variety with small horns lying back, which Schubotz also came across in the Rugege forest south of Lake Kiwu. Only Raven was successful in killing a specimen. Although I came within a few paces of them at least ten times, without however seeing a hair of them, I only once managed to get in a shot. In spite of a lengthy pursuit, I had to give up the chase. All further attempts failed, although we scoured the neighbourhood from six to eight hours daily for a fortnight. These excursions, at the heels of the nimble Batwa guides, over summits of some 2,500 metres in height, over slippery ground and through the difficult underwood, were about the most exhausting of our efforts during the whole expedition. Twice I had to take in a hole in my belt, which, as a rule, was fairly tight.

The Batwa knew the favourite haunts of the beasts, or generally found them very quickly, and watching scouts informed each other loudly through the forest of the buffaloes' exact location, without in the least appearing to disturb them. A favourite way that the Batwa have of capturing these animals is to trap them.

Great wooden frame structures weighted with stones are set up at a spot where the buffaloes go to drink, in such a way that when the buffalo touches the water a piece of wood is loosened, and the trap falls over and kills him. This method appears to be very successful.

I would like to mention one perilous adventure with a "mountain elephant," the killing of which would have formed such an important zoological specimen to our collection of the district.

It was the 4th of October. Raven and I heard the trampling of elephants in a marshy meadow through which a small river ran, and we quickly followed. The wind was unfavourable to us, and so it was not possible to avoid detection. Suddenly, trumpeting was heard, and the elephants broke away. The immediate crackling of canes all around apprised me that I was in the centre of the herd. Then all at once, twenty paces off, I perceived the grey back of one of the animals. In spite of its closeness it was useless for me to shoot until I was able to distinguish clearly the vulnerable part of the head, denoted by the upper half of the ear. Immediately I could do this I took aim, but being under the impression that the fatal point for the bullet was situated deeper, I lowered the muzzle of my gun a little and let drive. The elephant swung round like lightning, splintering the bamboo with his head, and made for me. As the dense brushwood obscured the view, I jumped aside, crashing through the cane into the shrub whilst the beast rushed past. The troop of elephants, some of which had been behind me, were attracted by the shot, and circled round me trumpeting. The whole forest was in an uproar, and I saw bulky grey masses rising up all round me. Shooting was not to be thought of, for it was impossible to distinguish particular parts of the monsters' anatomy whilst they were thus waltzing round. The turmoil approached in my direction, and evidently the whole herd was close at hand. The ensuing moments have no place in the agreeable reminiscences of my travels! A young animal with bad tusks, and not worth shooting, came right up to my position, remained standing five paces in front of me, and then passed me



AT THE NJUNDO MISSION STATION



BUFFALO TRAPS IN THE BUGOIE FOREST

so closely that I could have touched him by stretching out my arm. Suddenly he caught the scent, and tore away trumpeting, taking the others along with him, and the whole herd rushed madly past.

Wiese had in the meantime gone back to Kissenji on urgent business, and letters called for my return there also. So we shifted our camp in the direction of Kissenji, into the domain of the chieftain Chuma.

The motive that led us just there was principally the assertion of the Batwa that it was the haunt of the *impundu*, the name by which the gorilla was known at Mgahinga. The truth of this peculiar story had, of course, to be tested. It was important to determine whether the *impundu* was another form of gorilla, or whether it was another breed of the anthropomorphous ape. I may state straightaway that the latter was the case, and it proved to be a large kind of chimpanzee, the *tschego*. So the name *impundu* served for both.

We found by observation that the *impundu*, gorillas as well as *tschegos*, haunted the margins of the upper forest. At Mgahinga we found fresh droppings, and trails on the margin of the bamboo and upper forest boundaries, though in the interior we never observed any signs of their existence.

Little is known so far as to the habits of the *tschego*. We were able to verify with certainty its custom of using trees for a sleeping place at night, and that the favourites were the lofty podocarpus—the *umufu* and the *mutoie*—which are free from branches up to the crown, obviously because they afford an extensive view and also the greatest safety. In the morning the *tschegos*, who live in families of five to eight, leave their sleeping-trees somewhere between seven and nine o'clock, letting themselves down to the ground with the greatest nimbleness, to feed on young bamboo shoots. The *tschego* is not exactly fastidious in his food. The Batwa told us that he is fond of leaves, fruit-skins, blossoms, and tender tree-shoots, though as far as my own observation went, he confined himself to the sapotacæ (*mutoie*).

The individual families have a particular range, or parish, which they are unwilling to leave. Early at sunrise, and in the evening when dusk is approaching, their clamour is heard far away, setting in faintly but swelling gradually and terminating in shrill screechings, which last only a few moments. This is repeated at irregular intervals, and the Batwa attribute the outcries to dissensions and quarrels amongst the "family." Such moments are opportune for the hunter to step in and attempt to get close to them.

A broad, deep ravine yawned immediately below our camp, at the bottom of which rushed a spring, which separated us from the mountain slope opposite, and from which we used to hear most of the screeching apes.

An attempt made by me one evening by failing light to stalk up close to a sleeping-tree I had to abandon as impracticable, as the almost impenetrable brushwood could only be crawled through on hands and knees, and this took so long that darkness set in. So I had to wait until the morrow.

Next morning before daybreak the three of us sat ready outside our tents, each with our guide, awaiting the first screechings of the creatures. I had picked out a Mutwa as my only companion. He had raised difficulties at first, for, unfortunately, it was just the *impundu* that the Batwa had selected for their *umusimu* or totem. However, on my representing to him that he would take no part himself in the killing, but that that would be entirely my own business, and that all he had to do was to lead me to the right spot, he eventually agreed to be my assistant.

It now grew gradually lighter. Certain parts of the forest gorge began to be visible through the breaking dawn, but dead silence still prevailed everywhere. Soon the first call of a waking bird could be heard here and there. Then, at last, when the glorious red of the morning sky heralded the rising of the sun, a flight of grey parrots flung themselves with a stiff flapping of wings shrieking on to the branches of a neighbouring tree. As by a stroke of magic, everything grew alive all round us. The birds began to chirp and twitter louder and louder with the



IN THE FOREST REGION OF MIKENO



VISIT OF THE BELGIAN OFFICERS (IN DARK UNIFORMS) TO KISSENJI

coming day, and as the first rays of the sun threw bands of light through the tree tops, the sounds we were waiting for so eagerly were heard coming faintly across the gorge, and we could see the resting place of the game we were coveting.

Our council of war was soon over. Raven on the left in case the *impundu* should break out on that side, the Father Superior on the right, and I in the centre. The forest soon swallowed us up, and then the fun began.

The small, supple body of the Mutwa slipped through the incredible maze of creepers, bamboos, and thorns with admirable dexterity, whilst the European in his clothes had to maintain a steady battle with the thorns, which continually impeded his progress. A well-meant suggestion on the part of my Mutwa that I should divest myself of my clothes and hunt in his own costume did not appeal to me, as I had some personal regard for my skin. Having reached the bottom of the hollow and crossed the stream, we started climbing the slope, so as to reach the spot before the apes left the tree from which we had again heard their screaming, a sound which impresses itself indelibly upon the memory. Once they got to the ground they would be lost so far as we were concerned.

If it had been difficult to get down, we found it almost impossible to climb up again. Our hands were covered with rents and scratches, our bodies were dripping with perspiration, when at last our arrival at an old elephant haunt brought some relief. It was now past seven o'clock, and we calculated that we must be close up to the tree in question. It was impossible to see through the dense brushwood.

My guide stood still listening, with his head bent forward and his eyes on the ground. Then slowly raising his arm and pointing upward with his fist—to do so with a finger spelt bad luck—he whispered: "*Wanakula*" ("they are feeding"). So thus far all was well. We crept on further with the very greatest care, anxiously putting aside every twig and dried leaf with our hands. A quarter of an hour elapsed. Once again we stopped and listened. Not a sound was to be heard. Our prospects

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grew worse as the sun rose gradually higher. Undecided whither exactly we should turn next, we slunk along further for a few steps when suddenly the screeching burst out again in our immediate vicinity almost right over our heads. We used the noise as a cover, and rapidly advanced a little further till a wall of thorns, through which it was impossible to work without making some noise, arrested our progress. The slightest sound now would have been fatal, so with knees raised and on the tips of our toes we moved a little sideways. It was labour lost! No sight of our quarry to be obtained from any point; a mere confusion of foliage above and all around us. The situation was critical; for at any moment the chimpanzees might leave their tree. Finally, I reached a spot where there was a slight break in the leafy roof, and through this aperture I perceived an immense ape standing on the bough of a lofty *mutoie*, perhaps sixty metres up. In a flash my rifle was at my shoulder, and the noise of the shot rattled and reverberated through the forest with resounding echoes. A heavy fall and wild bellowing followed. At the same moment I caught sight of a second ape, apparently younger, through the circle of the small aperture, and the dull thud of the bullet convinced me that I had hit again. We now worked along as rapidly as we could manage it to the trunk of the tree, to which a fresh track of blood guided us until it was lost again in the shrubs. Here we heard the chimpanzee, evidently badly injured, fleeing down the slope amongst the rustling foliage only a few paces in front of us. But to catch up with an ape, even a wounded one, in a forest thicket is a hopeless task for any European. So I soon gave up the chase. At the sound of my firing, however, a few of my people who had followed up behind now came up with me. The promise of a large baksheesh spurred them on to renewed efforts. Without a moment's consideration they glided down after the game, following the trail. A few anxious moments of breathless suspense followed, and then I heard faint, subdued cries, which filled me with an indescribable feeling of satisfaction. The old fellow, who was badly hurt, had stood up against my people down in the gorge, and they had



CULTIVATED LAVA FIELDS NEAR THE VOLCANOES MIKENO AND KARISSIMBI

finished him with a spear thrust. As the men declared they could not carry up the heavy booty alone, I returned to the camp and despatched an Askari with a few carriers to their help. Two hours later the slain quarry was brought in triumphantly hanging on stout bamboo poles. In spite of strongly marked blood-tracks the younger chimpanzee could not be overtaken.

The next day brought a piece of hunters' luck to the Father Superior. After further and similar exertions he succeeded in reaching another sleeping-tree, from which he shot down a young chimpanzee. As he rapidly approached the dying creature the bush became animated, and, fifteen paces off, there appeared the head and gnashing teeth of a little old male (they often accompany the families at a distance, but keep to themselves), who seemed not indisposed to attack him. But receiving a bullet in the breast, he also succumbed in a few minutes. In spite of all this, however, the troop did not abandon the field, and the agitated trees and bamboo proved the proximity of the furious animals for a considerable time afterwards.

The skin of the old one was covered with greyish-yellow hair; the hands and feet, like those of my specimen, were a deep black, while the younger animal had a far lesser length of body, with deep black hair and yellow face and hands.

Thus our arduous time in the Bugoie forest was eventually crowned with some measure of success, and brought us the solution of some few zoological problems. I had at least the good luck to be the first European to capture specimens of a hitherto unknown race of man-apes and to observe their habits.

Our task here was now completed, and our stay was soon brought to an end. We descended into the valley of the Sebeja, bade farewell to Barthélemy at Njundo, and, accompanied by Czekanowski, who met us here as agreed upon, we arrived on the evening of the 11th of October at Kissenji. The place had been gaily decorated in honour of my birthday, which was the day before our arrival, and at the entrance to the town we were met by Knecht, Grauer, and the other members of the expedition. For the purpose of holding serious council together, I had begged

the various members of the expedition to interrupt their labours for a little while and to meet together at Kissenji.

In the meantime Derche, the Belgian commandant of the Russisi-Kiwu territory, which we should have to traverse after leaving our protectorate, had arrived at Ngoma with his staff, and came over to Kissenji to greet us. His visit gave a welcome opportunity of discussing a number of pertinent questions, as we were about to cross into the Congo State.

The days which now followed were very strenuous, for in consequence of the various separate journeys to Lake Lukondo-Bolero, to Bugoie, to the Rugege forest, and to the larger islands of Lake Kiwu, and also to northern Kiwu, a considerable collection of ethnographical, zoological, botanical, geological and topographical material had amassed at Kissenji. All this had to be sorted out and duly labelled, so that it could be despatched without delay to Europe. Further, a large number of photographic plates had to be developed so as to test the reliability of the apparatus, which had suffered a good deal from exposure and damp within the last few weeks. For this purpose we erected a dark-room of bamboo, so heavily thatched with grass that no ray of light could pierce through, even when the sun was at its brightest.

Added to all this work, there was a huge mail to be got ready and despatched to Europe. As a matter of fact, we only met together at the common meals in the officers' mess. Weiss started away again on the 18th of October to continue the interrupted topography of the volcanic region. On the 21st a caravan comprising seventy loads of scientific material was sent off under the leadership of two Askari to Bukoba, to be forwarded thence to Berlin and Leipzig. Before we departed we duly celebrated the birthday of Her Majesty the Empress. I gave an address to the Askari and the population of Kissenji and ordered a march past of the troops. A few days later we set out for the Congo State territory.

Keeping to our principle of divided marching, it was arranged that Schubotz and Mildbraed should first visit Bugoie, and then



SUMMIT OF MIKENO
SEEN FROM THE HANS MEYER CRATER

undertake a searching zoological and botanical investigation of the whole volcanic chain. After paying a visit to the Batwa, Czekanowski was to follow our route via Busuenda.

Kirschstein's special work was also now commencing. Wiese, Raven, Grauer and I wished to accompany him in the ascent of Mikenno and Namlagira, to proceed later to the Belgian station of Rutschuru, and then on to Lake Albert Edward. We hoped to establish friendly relations there with the Belgian officers, and thereby smooth the way for those following us. Our meeting point later on was settled for Kasindi, at the northern end of Lake Albert Edward, on Christmas Eve.

It was a curious coincidence that a few days earlier Lieutenant Knecht, the meritorious chief of the Kissenji station, should have received his recall home. His relief had already arrived in the person of Lieutenant Keil. So we had a general leave-taking at the border of the Kissenji district, everyone wishing everyone else a prosperous journey and happy return home.

At the top of the pass we turned and sent a farewell greeting to this ideally situated spot of German territory where we had spent so many memorable hours, and then marched forward into the Congo State.

Wiese, Raven, Kirschstein, Grauer and I, as well as Weidemann and Czechatka, to whom the supervision of the caravans at the camp was made over during our excursion on Mikenno and Namlagira, pitched our tents at Burunga, a "permanent" Belgian post at the foot of Mikenno, a halting-place on the great Uvira-Bobandana-Rutschuru road. These Belgian *étappes* are most comfortably organised. There are thatched roofs resting on four corner posts under which the tents may be set up. They afford coolness in great heat and form a perfect cover in a downpour of rain. At one end of the quarters there is an elevated *banda* for meals, the position being so chosen that a splendid view may be enjoyed. There is even a tariff-table of food and beverages, which may be obtained from the camp-

orderly. As a matter of fact, these consist mainly of mutton, goat-flesh, poultry, milk, eggs, sweet potatoes, tomatoes, mangoes and *papaya*.

As the rain was coming down in torrents the ascent of Mikenó promised to be very difficult in consequence of the slippery state of the ground. So we decided to take only the most absolute necessities with us, and thus limit the escorting caravan as far as we possibly could. However, we took reserve carriers with us to relieve the bearers of the heavy tent loads.

Kirschstein declared Mikenó, like Sabinjo, to be a volcanic mass consisting essentially of lava discharges pouring one over the other. Captain Herrmann's declared supposition that Mikenó was possibly the remainder of an imposing crater wall is therefore hardly confirmed.

Early on the morning of the 6th of October our party was pushing its way towards the small, circular, marshy plain which lies at the foot of Mikenó. A narrow path leads for some distance thence up the mountain slope. This path, which had been made by the missionaries of Njundo when attempting the ascent, at least indicated the way for us, although it was scarcely recognisable, and bearing this in mind Barthélemy had given us his former guide for a help. The latter, however, lost his way quite at the start and it was a considerable time before he became aware of the fact. We were forced, therefore, to retrace our steps downward from the height we had so laboriously climbed, until we regained the marshy plain. After a little while we struck the proper road.

At first we passed through bamboo, but this soon gave way to a lighter tree zone. The road was very steep, and the innumerable roots that covered the slippery path hindered us so that we progressed but slowly. Stops were rendered constantly necessary. After ascending for some hours we reached a height of 3,000 metres, and by that time the carriers were utterly exhausted and we had to camp. There was not a single spot where a tent could stand, for the mountain side showed an incline of thirty degrees all round. Further progress was out



BREAKFAST ON MIKENO (AT A HEIGHT OF 3,700 METRES)



BLOCK LAVA BETWEEN NAMLAGIRA AND NINAGONGO

of the question ; a remedy had to be found somehow. There was nothing for it but to dig out a rough terrace and build some kind of platform for the tents. This we did, but it must be confessed that they stood quite crooked and unsteady, and it required some art to keep one's equilibrium, or even, in fact, to sleep in them, for the bedsteads glided down the slanting surface, and in the morning several of our company found themselves in quite different places from where they had been when they laid down to rest.

Next morning a new difficulty arose. There was no water. We sent out a scouting party, but it returned at noonday having met with no success. As, however, water was an absolute necessity for the carriers, and as it was certain that conditions would not improve as we got nearer the summit, we had no other choice but to conclude the day as inactively as we had commenced it. We remained in camp and sent all the carriers back with their calabashes to the watercourse at the foot of the mountain, so as to establish a kind of depot in case we did not find any water on our way to the summit. The carriers set off discontentedly on their toilsome descent, and it was growing dusk before they returned with their filled vessels.

From our camp we had a splendid view of Ninagongo, whose peak rose up imposingly from a sea of cloud. Down below, the cloud masses, driven by the air currents, chased over the plain. Above these the outlines of the mountains stood out sharply defined in the rays of the sinking sun, which bathed the surrounding scenery in most wonderful tones of colour, almost like the northern lights. I sadly regretted the absence of a painter in our party, for the scene would have formed a subject worthy of an artist's greatest skill.

The air grew icy cold as night fell. A violent breeze sprang up and gave our unprotected tents such a shaking that Grauer, for one, capsized with his bed whilst reposing in his "Tower of Pisa"-like tent. The poor fellow crept out of the entrance shivering with cold and calling for assistance. Dense layers of fog crept across the mountain slope and swept over our heads.

This continued during the early morning, so that we could see but little in ascending. A trifle higher up the air grew clearer and at moments we obtained through the driving clouds glimpses of the rugged rocks at the summit.

The vegetation also changed. The forest region ceased. Tall bushes of heath appeared with thick branched boughs and gnarled trees five metres high. Long beard-mosses, typical features of the Alpine world, hung down from the branches.

We advanced higher up on the south-east edge of the abyss and the way grew steeper. The thick carpet of moss covering the ground yielded to our steps, causing some of the carriers to slip and fall, and here and there a heavy load went rolling down into the depths till it stuck on some projection or hung on a heath bush. It was necessary, on reaching an elevation of 3,700 metres, to take another lengthy halt for the sake of the fatigued carriers.

As the caravan was impeding our ascent Wiese remained behind to control it, whilst we hastened forward. The incline was so steep at times that we had to use our hands in climbing.

After a time we caught sight of an extended narrow ridge which looked a likely place for camping. The whole of the vegetation at this point bore quite a decided Alpine character. The slopes were covered with a broad belt of *Senecio Johnstonii*, and tall lobelias, mingled with immortelles, extended to the almost perpendicular rocks of the summit, which stretched up another four hundred metres in front of us. The sun emerged from the clouds and diffused a comforting warmth for a few short moments, whilst our eyes roved enchanted over the glorious prospect, which included two-thirds of Lake Kiwu.

Our patience was severely taxed whilst waiting for the caravan, which arrived late in the afternoon, everyone being thoroughly exhausted. The ridge on which we were forced to camp was hollowed out by atmospheric influences, and it was so narrow that the edges of the tents reached beyond it and it was hardly possible to fix the pegs. The soft ground, moreover, offered insufficient security. So it was with troubled and



NAMLAGIRA, FROM RUTSCHURU

anxious gaze that we viewed the black cloud-banks on the horizon which foretold bad weather during the night. Our fears proved well-formed. The weather changed very quickly. Mist rose and enveloped the camp, and as darkness fell our thermometer sank to one degree Celsius. Howling gusts of wind, which rose to a furious gale during the night and pitilessly pierced the flimsy sides of the tents, swept full over the ridge. Everyone who owned a thick suit put it on: no one thought of sleep. Wrapped round with blankets we listened to the raging of the storm, expecting our tents to collapse every moment. At midnight Grauer's flew away; being the largest it offered the greatest surface of resistance to the wind. The others remained standing, it is true, but the pegs worked loose, the awnings were soon flapping about in the wind, and there was a general shouting for "boys" to go and fasten them. The wind increased steadily all the time. Towards morning the heavy clouds emptied themselves in violent showers of hail which rattled down upon the roofs of the tents, and covered everything around with a white mantle.

The morning dawned on a wintry scene. Our tents and the whole region around us were covered with snow. Otherwise the situation remained unchanged: impenetrable fog, wind and cold, with the thermometer, indicating the same temperature as the evening before. An ascent of the peak under such conditions could not be entertained for a moment, as there was no path of any kind and it was impossible to find our bearings in a heavy mist which prevented our seeing farther than twenty metres before us. As there was nothing to be done, we congregated in Grauer's "salon" by the dim light of a lamp, closed in the tent against the cold, and played "nap." Now and again a stiff glass of grog served to keep up our spirits. Thus we hung on for more favourable weather, and this came towards three o'clock in the afternoon. The fog dispersed and the summit was clear again.

Wiese, Grauer and I prepared to ascend at once. First we had to pass through the senecio forest, which is very difficult to

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negotiate as the moss-covered ground and the vegetation are always dripping wet. The shrubs attain a height of three metres, and their branches close in together so thickly that it is difficult to see the sky. Thus the ground hardly ever thoroughly dries up. We met with a good many more or less deep gullies, along the bottom of which ice-cold streams flowed, and these we had to scramble through. Whoever tried to gain a hold by catching on to the senecio bushes, pulled them out and began to slip, which was all the more unpleasant as the moss beds on the sloping surfaces would not bear a man's weight. It took us two full hours to reach the rocks at the peak although we had believed them to be quite close at hand.

On the top we found a deep chasm which led down into the rocks. We followed this, going over shingle till we struck hard frozen snow. This was rather too much for our "boys." They tiptoed over the cold subsoil uttering the most singular sounds. Finally, they sat down, crowded closely together, on a mass of rock and "would have nothing more to do with it."

All around us there rose steep smooth walls of rock. It was soon evident, therefore, that an ascent to the summit was out of the question unless we had mountaineering outfits, or made a careful investigation of the northern side. To accomplish this object we would have been compelled to stay up in that frosty region several days longer, and for this we were not adequately equipped. We had no rope of sufficient length to make such an ascent possible. In addition we were unable to light any fire in our kitchen, everything being in a soaked condition. Our followers were almost frozen and so pinched with the cold that they could hardly move their numbed fingers. In Kirschstein's judgment nothing of geological importance would be gained by the ascent, and from a sporting point of view we were not justified in endangering the health of our carriers. We therefore resolved to remain in camp till the next morning, to see if we could essay the climb in clearer weather. If it proved to be foggy we intended to set out on the return march.



THE CRATER OF NAMLAGIRA

It was high time to return as hastily as possible from the snowfield to camp, as thick layers of fog were beginning to rise up from the valley. So on a jutting mass of rock we carefully laid down a preserved meat tin containing our names as a record that, so far, this was the highest point on Mikeno which human foot had ever trod. On getting down we were again enveloped in fog, and it was with some difficulty that we succeeded in groping our way back to camp. Our frugal evening meal consisted of a few boxes of herrings and a tin of fruit. The night corresponded to the preceding one. The wind heightened to a gale, and shook our tents, and the pegs kept loosening. When morning drew near the mountains were again covered with a white cloak, and the fog had grown denser. The loads were strapped up and we began the descent to Burunga. The faces of our sorely-tried carriers lightened up, and they even attempted to strike up a song with their weak throats. Soberly we set out for the camping place lying deeper below, hurrying ahead of the caravan. Arrived there we made a light meal and gave the carriers a rest, and in the afternoon we were back in Burunga once more. The carriers came in singly and at long intervals, completely exhausted. Some even remained to rest on their way and did not reach Burunga until night. By a judicious distribution of extra baksheesh they were, however, soon restored to good humour.

On the first of November we set about making the ascent of Namlagira, whose eruptions have ceased of late, but from whose broad crater at that time we daily saw the vaporous clouds ascending.

Namlagira is separated from Burunga, as also from Ninagongo, by an extensive lava field which evidently emanates from the subsidiary craters on its southern slopes. The lava strata lie over one another about a foot in thickness, and pile themselves like ice-floes at a river's mouth. These had to be clambered over, and where broad fissures appeared long alpenstocks had to be used to leap the yawning clefts. These lava drifts are interspersed with jagged points of block lava. The latter

are very brittle and porous in nature, offer very little foothold, and cause a good deal of sliding and stumbling. The edges are as sharp as knives, and cut and tear one's boots and clothes in a terrible fashion.

The entire lava field is grown over with a species of lichen which has a whitish appearance in the sunlight, and gives the exact impression of an immense ice-field or glacier, an impression which the use of long alpenstocks rendered still more realistic. It naturally followed that in surmounting the obstacles of this difficult journey everyone had to find a path for himself, and before long we were so widely separated from one another that recognition of the individual khaki-coated figures popping up and down among the lava blocks was only possible by the aid of a telescope. As I had good going I arrived first at the southern slope of the mountain. At this spot a chain of eighteen parasitic cinder craters rise up like pearls on a chain, in a crevasse running from north-west to south-east. The lowest of them opens out in a wide semicircle to the south-east, and the spot where the lava stream makes its egress can be distinctly seen. A second one, apparently of more recent date, higher up the slope of Namlagira, has broken through the common wall of the crater chain and has taken a south-westerly direction. It originates from a steep-walled shaft of only a few metres circumference, from which a heavy white vapour with a sulphurous acid smell poured out incessantly. The Askari looked into the smoking depths with manifest distrust, and a man from the Burunga neighbourhood, whom we had taken with us as a guide, could not be persuaded to approach anywhere near in his tremendous awe of the *scheitani* (devil) who without doubt dwelt there.

Dr. von Raven and von Wiese came up soon after, whilst Grauer and Kirschstein, who were lower down, hungrily awaiting the arrival of the luncheon basket, put in their appearance later. We at once commenced the ascent to the summit of the crater, and proceeded without very great difficulty. Certainly a way had to be cut through the bush region with axe and knife, but



ERUPTIVE SHAFT IN THE CRATER OF NAMLAGIRA



CAKE LAVA AT THE SOUTHERN FOOT OF NAMLAGIRA

this work did not cause much trouble and hindered our advance but little. A good many elephant trails were seen right up to the vegetation limit of 2,700 metres. Keeping a moderate climbing pace, and striding over bare lava at the finish, we reached the crater in two hours. This ascent was the first undertaken from the southern side, whilst Lieutenant Schwartz, who was appointed to the German Congo Boundary Expedition, made his first ascent from the eastern side in 1902.

Namtagira is a flat volcanic peak with a very gentle slope traversed by broad longitudinal and latitudinal rifts and, like Ninagongo, possesses a very typical broad explosive crater. The latter, in fact, is larger than the Graf Götzen crater, the diameter, according to Kirschstein's measurements, being close on two kilometres! Although we had already received many memorable impressions of the grandeur of the African volcanic world, we were, nevertheless, taken aback at the spectacle of this colossal crater. Its walls fall almost vertically to the depths, and end in a kind of terrace which encircles the crater and which in its eastern part has a ledge projecting towards the centre. This is the remainder of an old and much riven crater-floor which was once blown up by an exceedingly violent eruption. The terrace falls away steeply to the actual floor, which is perfectly level like that of the Graf Götzen crater. Smoke of a sulphur-yellow and chalky-white colour issues from a large number of cracks and fissures. Terraces and crater-floor are formed of congealed lava, and are covered, in places, with still smoking layers of cinders and lapilli. These spring from the more recent outbreaks of Namtagira, not from the crater proper, but, as Kirschstein will prove later on, from an eruptive flue blasted up through the terrace projection just mentioned.

We had gone without food since six o'clock in the morning, and our hungry stomachs were insistently demanding their rights. So at four o'clock in the afternoon we began the descent over smooth lava, and before very long we found a favourable spot in the vicinity of a small stream. We encountered some difficulty in driving our tent pegs into the cracks in the lava, and

were not without fear of the tents collapsing. Finally, however, we sat down to do full justice to a smoking dish of *Busi* (goat-flesh), and to discuss the various incidents of a very eventful day.

As Wiese, Raven and I had to push on farther north in order to establish friendly relations with the Belgian officers who were awaiting us at Rutschuru, we bade good-bye to Kirschstein and Grauer, the latter of whom contemplated returning to Kiwu, whilst Kirschstein prepared to devote himself to the special task of investigating the geological conditions of the volcanoes, a matter for which I had granted him a few months' time.

During a period of over half a year of strenuous activity, during which he successively ascended all the eight mountain summits, Kirschstein thoroughly explored the Virunga volcanoes and elucidated the conditions of their subsoil and their tectonic and geological formation. I trust that this, the first expert geological investigation of the practically inexhaustibly rich and interesting field of the volcanic region at Lake Kiwu, may yield some valuable new material for professional colleagues at home.

Although we were not privileged ourselves to see anything in the way of a notable eruption during our stay at Namlagira, Kirschstein, who was compelled by his researches to remain several weeks longer, had the good fortune to witness at close quarters quite a number of outbreaks from this volcano. I append a brief description of one such event in his own words:

"I was awakened, whilst lying in bed early one morning, by a singular uproar which sounded something like the crashing of breakers on a distant shore. I tore aside the tent hangings and feasted my eyes on the magnificent view of an eruption of Namlagira. Surging and swelling violently, and sounding something like the variable roar of an immense, invisible furnace, white clouds of steaming vapour, resembling monstrous cauliflower heads in appearance, issued continuously from the crater, forming over our heads a mighty pine-like canopy, spread out like a fan at the top. It seemed to grow in the clear morning air to



A PEEP INTO THE CRATER OF NAMLAGIRA

simply endless dimensions. Then a strong rush of brownish exhalations mingled with the gleaming white. A broad fiery stream shot up suddenly into the air . . . then followed a second . . . a third. . . . It was as if gigantic hands were incessantly and indefatigably hurling up untold bucketfuls of glowing ashes from the deep throat of the crater to the light of day. Simultaneously a dense lapilli shower descended from the eruptive cloud. A rain of finest scoria, cooling rapidly in the air, was swept by the east wind that prevailed over many kilometres of the western edge of the Central African rift-valley. In the meanwhile the pine cone, which had previously gleamed white, assumed a deep black colour in its lower part. The uppermost parts of the cloud masses, lying towering over one another like tremendous balls of cotton wool, alone retained their whiteness. . . . After about an hour the vehemence of the outburst abated appreciably. The rain of lapilli ceased. Singular exhalations shot up in the eruptive cloud, which had now turned pure white again but was much less distinct in form, and were accompanied by sharp detonations. The roaring in the depths swelled with a rattling noise as of hundreds of hammers forming one powerful chord, but it lasted only a few seconds, and then sank away again to a steady, hardly perceptible murmur, and finally ceased. In another half-hour all was over, and Namlagira lay reposing peacefully before our eyes. Only a faint cloud of smoke remained hovering around the bare summit."

Altogether Kirschstein observed eleven such violent gaseous and cinder eruptions of Namlagira, and he photographed the greater number of them. He writes: "At night the eruptions from the volcano presented a picture of thrilling beauty. The columns of vapour, illuminated as if by a smelting furnace, shot up from the broad mouth of the crater like pillars of fire to the heavens, gleaming blood-red, and then fell down to earth again, sparkling and scintillating in a glorious rain of glowing ashes. It could be clearly perceived that the greater portion of the volcanic sputum fell back again into the crater. It was so light around that in the camp at the southern foot of the mountain

I was able to read off the barometer, or the time, without the aid of any lantern." The eruptions were always alike in character, and consisted of an immense mass of aqueous vapour, no discharges of lava making themselves apparent.

Some of the eruptions observed by Kirschstein were surveyed at the same time by Lieutenant Wiese with the photo-theodolite, from a greater distance. The pictures measured later with the stereo-comparator showed that in one case (the eruption of the 17th November) the vaporous pine-like formation measured no less than nine kilometres in height, whilst it attained a breadth of nearly nineteen kilometres in the uppermost fan-shaped parts. These figures assist one to form an idea of the immense area occupied by these gaseous vaporous masses during an eruption.

It may be deemed worthy of mention that Kirschstein, who ascended Namlagira before, during, and after the eruption, four times in all, also ventured to effect a descent to the crater of this active volcano for the purpose of elucidating manifold and diverse geological questions. With regard to this decidedly daring experiment he shall speak for himself:

"I essayed the descent," reports Kirschstein, "in clear weather on the 5th of December with a few specially picked followers on whose trustworthiness and cool-headedness I thought I could implicitly rely. Quite suddenly in the middle of the crater we were enveloped in a dense mist and a fine drizzling rain. The fog was so thick that we could hardly see five paces in front of us, let alone discern the edges of the smoking jaws of the volcano. One false step and we should have vanished irrevocably for all eternity in the sinister yawning depths. At the best there was the danger of being lost in the dense fog. In these circumstances I decided to await a change of weather on the spot itself. For two hours we waited, glued to the same position. Then, suddenly, there came a dull rumbling from under our feet like subterraneous thunder. First gently, resembling thunder at a distance. Then again. Finally swelling distinctly from minute to minute. . . . Cold sweat bathed



CINDER CHIMNEYS AT THE SOUTHERN FOOT OF NAMLAGIRA



ERUPTION OF NAMLAGIRA, NOVEMBER 12, 1907



ERUPTION OF NAMLAGIRA, NOVEMBER 17, 1907

my forehead. There could be no illusion, the mountain was awakening to fresh activity! Aware of the terrible position in which we were placed in the centre of the crater I immediately gave orders to march back. And indeed it was high time, for the lapilli was already beginning to rain like hail upon our heads; the volcanic fumes stifled our lungs and oppressed our chests; our breath grew shorter and shorter, and we could almost hear our hearts beating. We groped our way forward in silence, but the heavy fog prevented us from ascertaining our position. My people, too, had entirely lost their heads. They charged me with having brought down the wrath of the *scheitani*, or devil, of the mountain upon us through having photographed him in his dwelling-place, and denounced me for having led them to their destruction. In short, after wandering aimlessly around step by step, we continuously found our way barred by the steeply rising crater walls, whilst the dull rolling thunder momentarily increased in volume. It was a highly disagreeable, indeed, a highly critical situation. I could feel the blood throbbing in my veins. Unless we found our way out of the mouse-trap very quickly we were utterly lost. . . . Luckily for us the thick veil of fog lifted. Only for a moment though. Yet it sufficed. I had noted the position on the crater walls where we might find our way out. A few moments later we were standing up above on the edge of the crater, and a loud hurrah sprang from our throats. We were saved from our peril. My black followers skipped about for joy. Now, of course, not one of them had entertained the slightest fear of the *scheitani*. They were, naturally, far too enlightened for anything of the sort, was the opinion of one of my Askari. . . .

"I repeated the descent on the 15th of December. The weather was clear and sunny and so I was able to make the circuit of a large part of the inner crater-terrace, besides taking some observations of much value to me. I also succeeded in getting some capital photographs. The vapour formation was of an extremely slight character, and a thorough examination of the different parts of the crater was possible. Besides the chief

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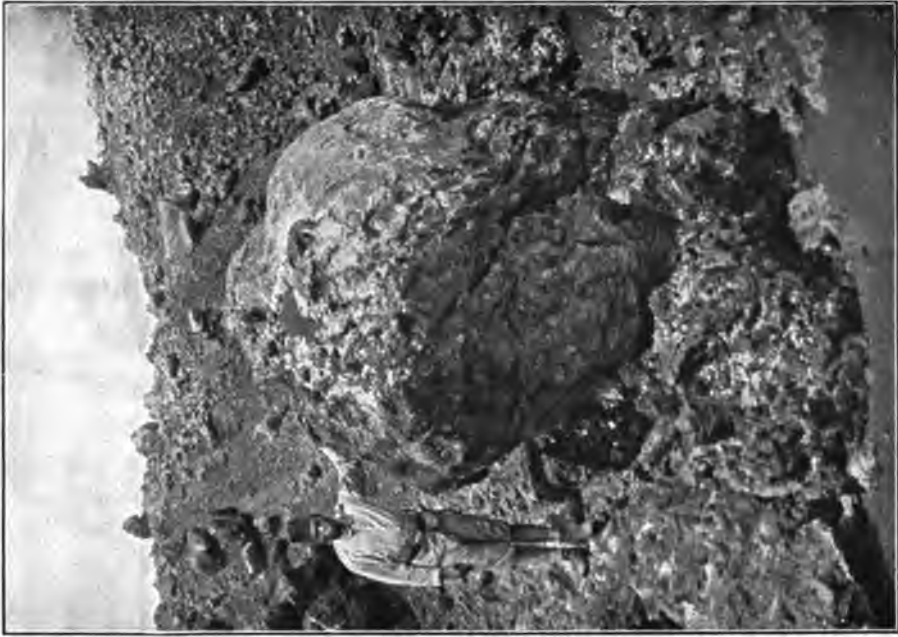
eruptive canal I discovered two further flues running down vertically into the earth, which like the main one, had burst out from the encircling terraces (not from the crater-floor proper) and were smoking faintly."

During the whole of his sojourn at Namlagira Kirschstein kept a regular record of the meteorological conditions; made scientific investigations into the relations of the parasitic craters; determined their exact shape and position, and carried out a great many further tasks. These dealt chiefly with the manifold volcanic phenomena encountered in the comparatively recent lava field piled south of Namlagira. Besides characteristic volcanic cinder chimneys, "hornitos" as they are called, and the singular lava cloaks on charred tree trunks, there was a long lava tunnel (155 metres), very typical in feature, and in many respects instructive, which particularly arrested our attention. As is well known, lava tunnels of this description are formed by the stream of lava cooling off very quickly on the surface whilst the fiery stream continues to flow on beneath the congealed outer crust, leaving the latter finally in the shape of a hollow tube, often a kilometre in length. In the one we investigated (see illustration) the end part of the tunnel was quite intact and merged into an open cavern. Further on, however, the tunnel had caved in so that it formed a lava fissure running in a direct line from north-west to south-east, four metres in width and seventeen metres in depth. It may be questioned whether a large proportion of the gaping lava rifts found in other volcanic regions, and which are attributed to tectonic action, may not have arisen in the same way.

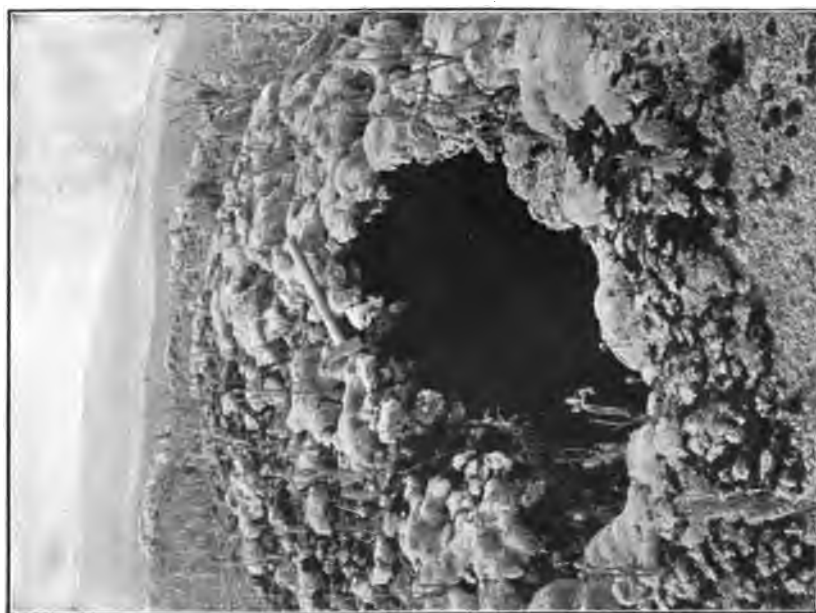
There was another interesting result of Kirschstein's investigations in the Namlagira district. He was successful in discovering a series of those most primitive forms of manifestations of volcanic forces which Branca first described with any accuracy as occurring in the neighbourhood of Urach in Swabia, and introduced to science under the apposite title of "volcanic embryos." These are steep-walled eruptive canals, sometimes only a metre in breadth, which have been blown up through the



A LAVA TUNNEL



A BOULDER OF LAVA ON THE ADOLF FRIEDRICH CONE,
NAMLAGIRA



SCORIA CRATER, WITH GROWTH OF LICHEN



COATING OF LAVA ON A DECAYED TREE TRUNK

outer crust of earth in consequence of an explosion of the gases pent up in the subterranean centre, without any loose or solid volcanic sputum having amassed around the mouth of the shaft. Consequently no volcanic cone has formed, and so, to some extent, these explosive products are the youthful stages in the life of a volcano. For if it is assumed that every eruption is introduced by volcanic explosion, the existence of an explosive canal under all the burning mountains of the earth, whether extinct or still active, must be taken for granted.

So far as the eruptive shafts in the vicinity of Namlagira, which were investigated and accurately surveyed by Kirschstein, were not choked up by the stone, rock and rubble scattered by the explosion, they proved to be extremely deep. In any case, the hundred-metre rope used by Kirschstein did not suffice to probe their depth, and on throwing largish stones down, the rumbling and rattling could be distinctly heard for at least ten seconds.

The results of his other researches may here follow in his own words:

"It matters not whether we proceed on our way over the lava fields of Namlagira or, standing on the summit of Ninagongo, we direct our gaze over the gaping depths of the Graf Götzen crater, the knowledge that we have newly-formed volcanic soil under our feet remains. There is a feeling of surprise that the earth does not suddenly begin to quiver and tremble. In truth the possibility of any surprises of such a nature is not altogether excluded. This is shown by the new volcanic formations found at quite a recent date in the western group of the Virunga volcanoes.

"Thus a small volcanic cone formed itself suddenly one day in the month of May, 1904, to the south of Namlagira, and spouted out a stream of lava 250 metres broad as far as to the northern end of Lake Kiwu. The glowing river buried trees and bushes in its course, and hurled lava blocks and bombs, six feet or so in height, as far as the lake, ten kilometres away. When Weiss and I visited the newly formed, and until then

nameless, volcanic cone in October, 1907, being the first Europeans to do so, and definitely determined its position cartographically, we christened it, in honour of his Highness, the Adolf Friedrich Peak. The cone itself is formed of quite loose eruptive material, innumerable heaps of scoria which had massed themselves over one another. There is no crater perceptible. The point of egress of the lava stream, the eruptive flue, is buried under the mighty masses of ashes and thus remains invisible. The cone, however, is traversed in parts by cracks and rifts which steam vigorously and on the edges of which the scoria are coloured in hues varying from sulphur-yellow to dark red-brown. It is not requisite to be endowed with the delicate sense of smell of a chemist to recognise the gases which issue from the depths. The prickling smell of sulphurous acids, with which in places muriatic acid fumes are mingled, may be detected for miles around. Sulphuretted hydrogen and carbonic acid gas also play a prominent part.

"A second and smaller volcanic cone of the same type as the Adolf Friedrich was formed in the autumn of 1905, to the east of Namlagira. The natives called it *Kana* maharage*, which means 'the master who loves beans.' This was the name given by the natives to Lieutenant Pfeiffer when living, who came to grief whilst elephant-hunting, and whose spirit they believed to have flown into the hill which had suddenly risen up from the level ground to an accompaniment of fire and thunder. Like the Adolf Friedrich, the *Kana maharage* cone consists mainly of loose volcanic scoria, and differs only from the first-named in that it possesses a visible summit crater, with a diameter of about seventy-five metres at the top. When I visited the *Kana maharage* in December, 1907, my attention was attracted by a large number of places on the surface of the lava stream, in the near vicinity of the cone, which smoked in parts and were multifariously coloured, chalky-white, brick-red, dark-brown. The impression given was that a person had got hold of an inexhaustible paint-box and casually daubed the greyish-black

* *Kana*, incorrect Wanjaruanda pronunciation of *bana* ("master").



ON THE ADOLF FRIEDRICH CONE



SUMMIT OF THE ADOLF FRIEDRICH CONE



CENTRAL GROUP OF THE VIRUNGA VOLCANOES
WISSOKE, KARISSIMBI, AND MIKENO, SEEN FROM RUTSCHURU

lava with prodigious smudges of colour in the most prodigal fashion."

After exploring the active western group of the Virunga volcanoes, with their floods of recent lava, Kirschstein turned his attention to the middle group. This has probably been extinct for a considerable time. In addition to Mikeno, steep, jagged and weather-worn, the ascent of which I have already described, Karissimbi with its elevation of 4,500 metres is also noteworthy. It is the highest of the Virunga volcanoes, and at the same time is doubtless one of the most stupendous volcanic mountains in the world. Kirschstein in his report writes as follows:

"Karissimbi towers above the landscape, its mighty western plateau crowned by a cone of comely shape. With its solid, massive bulk, its gigantic proportions reaching up into the sky, it overwhelms the observer. The summit is very rarely clear, and a dense layer of clouds nearly always envelops it. When they disperse, perhaps for a few moments only, and hover like a white cap over the head of the peak, the glittering snowy splendour which reveals itself to the eye is a magnificent spectacle. A very characteristic view of Karissimbi can be obtained from the north, either from Wissoke or from the Belgian military post of Rutschuru.

"The principal cone rises up from the plain in a remarkably regular way, tapering off to the peak, whilst a long ridge extends along the eastern flank. Many travellers have maintained that this part of the mountain is the remainder of an ancient crater wall, but this is hardly correct. Incidentally I have ascertained that the so-called ridge is an extended and almost level plateau in which a tremendous hitherto unknown crater is buried, more than one and a half kilometres in breadth, and which I have named the Branca Crater. Karissimbi has a second crater almost direct south of the main cone. This is the Hans Meyer Crater. The summit itself has no crater. Bare rocks, broken up into a chaos of loose blocks, meet the eye. Ice lies in the cracks and clefts of the rock."

Karissimbi was climbed by Mildbraed, Schubotz and Kirsch-

stein successively. Mildbraed reports the vegetation as standing out in harsh contrast with that of Ninagongo.

"On Ninagongo," he writes, "everything was in the process of formation. Nothing had matured. The flora of this mountain offers no rich booty to the botanist, but yet it is imposing by very reason of its monotony. The enormous base of the volcano is covered with a pure bamboo vegetation up to a height of some 3,000 metres, and this extends in broad bands as far as the mixed bamboo forests of the Bugoie mountain land. From a botanical point of view the bamboo forest is uncommonly monotonous. Generally speaking nothing but scrubby undergrowth flourishes. The deep black vegetable soil is often covered by a carpet of small *selaginella*. Small ferns grow in it, different shrubs related to the stinging nettle (*Fleurya*, *Pilea*), and occasionally a pale pink balsam (*Impatiens Eminii*). Rarely, but more often in such spots where the bamboo is in any way impeded in its development, woody plants are to be found sprinkled here and there. Amongst these the often-mentioned *Hypericum lanceolatum* Lam., takes the first place. I measured stems of two metres in circumference, on the whole, the sturdiest that I had met with during the expedition.

"Up beyond the bamboo on Karissimbi a vegetation exists which, perhaps, has not its like on any other African mountain. Even from the lava plains below one can see it gleaming out from between the trees like luxuriant alpine meadows clad in freshest green. Having passed the monotonous bamboo, one is amazed at stepping into quite a strange open wood formed almost entirely of extremely old hagenia stems. One measured 6.45 metres in circumference. They looked almost like huge blocks of rock, divided at a short distance above the ground into gigantic overhanging boughs covered with thick mossy cushions, and unravelling in light branches bearing silver-grey, hairy pinnæ, slightly reminiscent of the well-known tanners' sumac (*Rhus typhina*). The undergrowth is composed of the pretty shrubs of *Hypericum lanceolatum*, a beautiful vernonia of tree-like growth, and there is a fine sort of blackberry bramble which



THE KANA MAHARAGE



BAMBOO FOREST AT THE SOUTHERN FOOT OF KARISSIMBI



KARISSIMBI, SEEN FROM MIKENO AT AN ELEVATION OF 3,900 METRES



SUMMIT OF KARISSIMBI, THE HANS MEYER CRATER IN THE FOREGROUND

carries blossoms of the size and colour of *Rubus runsorensis* Engl., The undergrowth, however, which forms the 'green meadows' which one sees from below, is a real wilderness of great African shrubs of which the most important are the umbelliferæ (*Anthriscus silvestris* (L.) Hoffm., and *Peucedanum Kerstenii* Engl.), as also a sorrel (*Rumex Steudelii* Hochst.). The soil is rich, soft and heavy: the foot sinks deep into it at every step.

"The heath region at Karissimbi is not particularly noteworthy. It is true that the *Philippia Johnstonii* Engl. attains stately, tree-like dimensions with very broad, dense crowns, comparing very favourably with the *ericaceæ* of Ruwenzori, but it is limited to the margin of the Hans Meyer Crater, an altitude of 3,800 metres, and only forms a streak amongst the *senecio* growth which starts lower down.

"The *Senecio Johnstonii* is extraordinarily developed at Karissimbi. It begins below the so-called south cone at an elevation of about 3,400 metres as a candelabrum-branched tree about ten metres in height, and extends up the cone for another thousand metres, of which it is the sole inhabitant. In the lower region it is interspersed with the mighty stalks of *Lobelia Wollastonii* Sp. Moore, which look like immense gun swabs. There were few blooming plants to be found in November; there were mostly withered stems or young plants with great shocks of leaves. One withered stem measured 5.50 metres in height, of which the blossom-spikes took up 2.50, the circumference of the hollow stems in the leafy region being 50 centimetres. It is the same genus which is characteristic of the alpine region of Ruwenzori. In this vegetation the ground is covered with a semi-shrublike *Alchemilla cinerea* Engl., which spreads almost all over the great mountain cone like a perfect grey-green carpet. It is excessively fatiguing to climb in it, especially in the lower part, where one sinks in up to the knees. Below the summit it gives way to mosses, liverwort and lichen, but we came across it again near the highest point in the shape of a few dwarfed specimens amongst the snowflakes and the storm-tossed lava fragments which were studded with ice crystals at an elevation of 4,500 metres."

Unfortunately this colossal volcanic giant was not fated to be conquered without loss of human life. Kirschstein and his caravan were overtaken by a terrible catastrophe on Karissimbi. When I received the following letter from Kirschstein I was filled with deep pity for the poor fellows who, whilst faithfully fulfilling their duty, had fallen victims to their superstitions:—

“My labours at Karissimbi were for the most part concluded by the 26th of February. My frozen followers had held on for a full seven days with me in the airy heights without grumbling. Added to the unwonted cold we were suffering from shortness of provisions. I therefore resolved to begin the descent. It was a bright sunny morning when we struck camp on the eastern edge of the Branca Crater, where for the time being we had pitched our tents. It never entered our heads then that in a few short hours we should be brought face to face with grim death. . . .

“As we had to return by the southern side of the mountain on account of its being an easier descent, I selected the shorter cut right across the Branca Crater instead of making a circuit of it, which would have meant a journey of two or three hours longer. The imposing, broad, flat surface of the crater forms a great moor, from the centre of which a small, irregular volcanic cone rises up. On the cone there is a beautiful clear lake encircled by very steep walls. A few other lakes, shut in partly by low hills, lie to the south-east and north-west of the otherwise perfectly level and spongy floor of the crater.

“We had safely traversed the first half of the moor when we were suddenly assailed by an extraordinarily violent shower of hail which came down from an almost bright sky, whilst a dense fog gathered at the same time. The temperature sank to zero, and then a snowstorm of such fury set in that, if I had not myself been a witness of it, I should have deemed it impossible in equatorial Africa. My carriers had scarcely perceived the snow when they threw away their loads, lay down on the ground, and with wails declared that they must die. It was in vain that I urged them to pursue the march. I made it quite plain to them that lying down on the icy cold, swampy ground,



ERICACEÆ, WITH BEARD MOSS, KARISSIMBI



**LOBELIA WOLLASTONII, SENECIO JOHNSTONII, AND CAREX RUNSSORENSIS-
BÜLTEN, KARISSIMBI**



KARISSIMBI, FROM THE SOUTH

without even the shelter of trees or the possibility of making any fire, would only mean certain death for all of us, whilst the crater-edge with its tree and plant growths would vouchsafe us shelter and succour. I insisted upon their standing up again. All in vain! To no purpose! Nothing sufficed to awaken them from their lethargy.

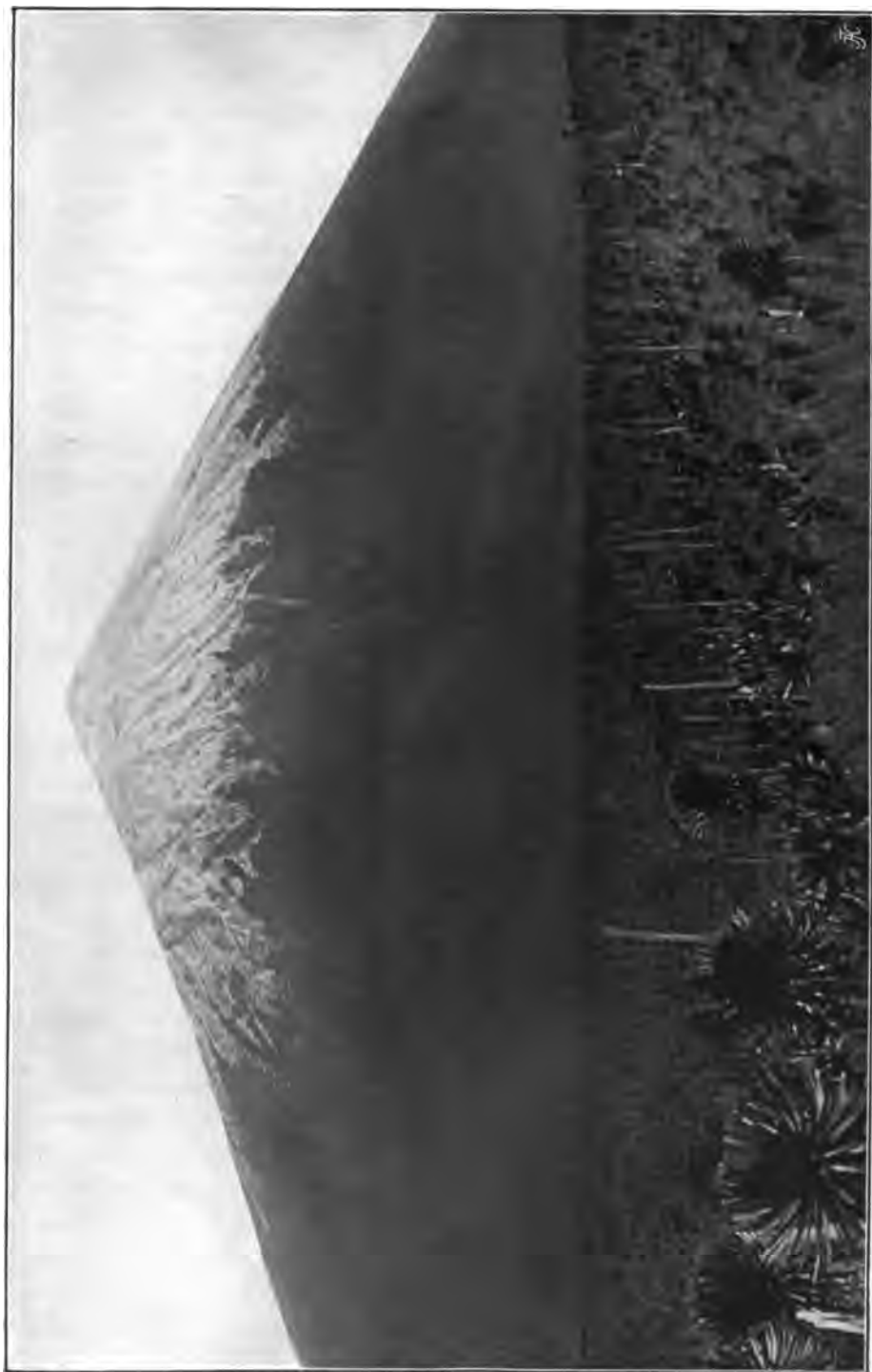
"All my persuasion, insistence and even threats brought no result. '*Amri ya mungu*' ('It is the decree of the gods, we must die') was the only reply that I could elicit. What was to be done? The will power and the intelligence of the European were powerless here against the fatalism and stupid apathy of the negro. Summoning up all my remaining strength of will I fought my way, wading up to my knees in icy cold water, accompanied by my two Askari and a very few followers, through the storm and snow straight to the edge of the crater. Arrived there we contrived to erect a temporary camp in the shelter of the trees and made a fire. Time after time, accompanied only by the two Askari, I penetrated the pathless swamp, and so brought one hapless native after the other to the warm camp fire. I ordered my men to leave the loads where they were so long as they rescued the people. But even our own strength failed at last. 'Master, if we have to go out again, we shall never return alive; we can do no more!' declared the Askari, and their looks corroborated only too well the truth of their words. These brave fellows had really done all that it was possible for human power to do. They had come to the end of their strength. The closing darkness, too, made any further attempt at rescue hopeless, as the nearly rigid and numbed unfortunates, who were invisible to us through the tall reed-grass, appeared to be unable to reply any longer to our calls. There was therefore nothing else to be done but to leave them to their fate until the morning.

"Absolutely drenched through, without any tent, limbs shivering from emotion and cold, and wrapped in a blanket only—that is how we spent the sleepless night round the camp fire, only to have to resume our work of exhumation again with

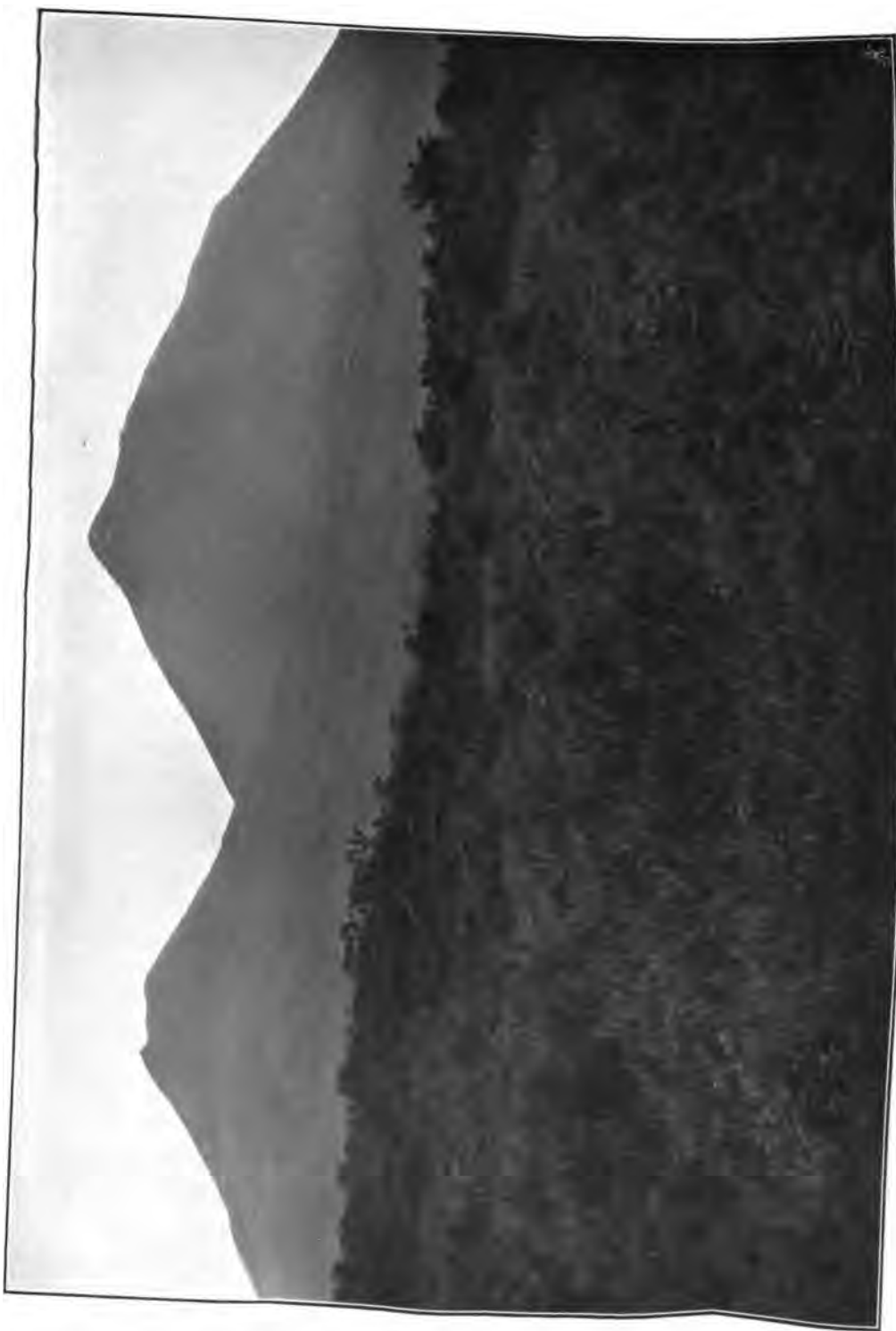
the first grey light of morning. *Exhumation*, not rescue, for what remained to be rescued was heartrendingly little. Very few of the luckless ones, of whom my carrier-leader Salim was one, showed any trace of life. All the rest, twenty in number, and nearly half my caravan, lay corpses in the snow. Frozen under a tropical sun! Faces horribly distorted by the death agony, fingers scraping deeply into the snow, so they lay! A terrible spectacle for us who had arrived too late to save them.

"One thought alone possessed me—Away! away! as far as ever possible from the abode of death! The loads had, of course, to be abandoned, amongst them my scientific collections and the whole of the valuable photographic material—the work of many weeks. Who would drag them along? We ourselves were half-dead. We could only take the most absolutely necessary things with us. Arrived at the lower Karissimbi camp I collapsed. When I returned to consciousness two days later I found that my people, or at least the strongest of them, had so far recovered that we could turn our attention to the task of unburying the loads which had been left behind. By good fortune they were all regained, not a stick was lost."

This most regrettable episode offers a very striking example of the fatalism, and the lack of energy engendered thereby, in the negro during dangerous situations, where a rapid apprehension of the position and cool-headed independent action would save him. "*Amri ya mungu*" is the watchword with which he confronts all the arts of persuasion. "*Amri ya mungu*"—it is the divine will that we are to die, so let us die. One might imagine this to be truly pious resignation and subjection to the divine power, but that is not at all the case. The formula so used is purely a phrase heard from youth up and handed down from father to son, in which the stupid apathy of the negro evinces itself. That it would be possible to overcome this by an appropriate method of treatment, by which I mean severity tempered with justice, is proved by the model behaviour and energetic conduct of the two Askari. Taken altogether, I could adduce many a fine instance of cool-headed and courageous action in



THE SUMMIT OF KARISSIMBI WITH NEWLY-FALLEN SNOW
SEEN FROM THE BRANCA CRATER



MGAHINGA AND MUHAWURA, FROM THE SOUTH-WEST

the face of peril on the part of most of the Askari who formed our escort for the better part of a year.

In spite of the severe catastrophe on Karissimbi, Kirschstein successfully completed the geological survey of the volcanic region, and amongst other achievements he was the first European to climb Wissoke, which belongs to the middle group. It would, however, lead me too far were I to enter into the details of his special investigations. I will content myself in this place with quoting a few of his observations concerning Muhawura, the easternmost of the Virunga volcanoes:—

“My researches on Muhawura, which is 4,165 metres in height, led to the establishment of the fact, which is as noteworthy as it is surprising, that this mountain, generally believed to be extinct, has had lava floodings at a comparatively recent date, which have streamed away over its eastern and north-eastern slopes. Thus the theory that the furnace of the volcanic forces in the interior of the Virunga mountains has travelled from east to west, and that therefore the older volcanic creations are to be found in the east and the younger in the west is confuted. For Muhawura, which is the most easterly, would in that case be the most venerable and longest extinct of the Virunga volcanoes; this, however, is not the case.

“The conviction at which I have arrived, based on the geological traces, of the relative youth of Muhawura finds support in the vegetation of the mountain, whose east to north-eastern slope is remarkable inasmuch as the flora bears the distinct stamp of the incompleted, one might say of debris: a mazy chaos of herbaceous growths, but no tree, only indications of bamboo, no *ericaceæ*. Mildbraed is also of the opinion that lava streams have flowed down this side of Muhawura at no very distant date. On the other hand, the senecio region at the summit is developed quite typically in places which have been spared by the recent lava floods. Here again, as in Karissimbi, one finds the conjunction of *Senecio Johnstonii*, *Lobelia Wollastonii* sp. Moore and *Alchemilla cinerea* Engl. The senecio, indeed, forms a belt-like zone, a real primeval forest of such density and

amidst such a jumble of timber covered with dripping wet moss cushions, that one can only work through it with considerable difficulty, often sinking up to the breast in the overgrown clefts and hollows.

"Finally, many of the native designations indicate that eruptions of Muhawura have occurred within their memory; whilst, on the other hand, they have no knowledge that Sabinjo or the volcanoes of the middle group have ever been 'fire-mountains.' Thus, for instance, an eruptive flue on Muhawura bears in the native tongue the name 'Kabiranjuma,' that is to say, 'the last bubbler' or 'last boiler,' whilst the land lying to the north-east of Muhawura is distinguished by the title 'Ufumbiro,' which means the smoker.

"The natural forces here have not had the complaisance to proceed exactly in the routine manner desired by man. The volcanic energy has certainly not worried itself much as regards the nice divisions into eastern and western groups, but has asserted itself quite independently. Muhawura is by no means the oldest extinct volcano of the mountain world around Lake Kiwu. So far as the degree of disintegration and other geological indications are concerned, Sabinjo in the eastern and Mikeno in the central group must be regarded as the most ancient of the Virunga volcanoes, or at least those which have been quiet longest."

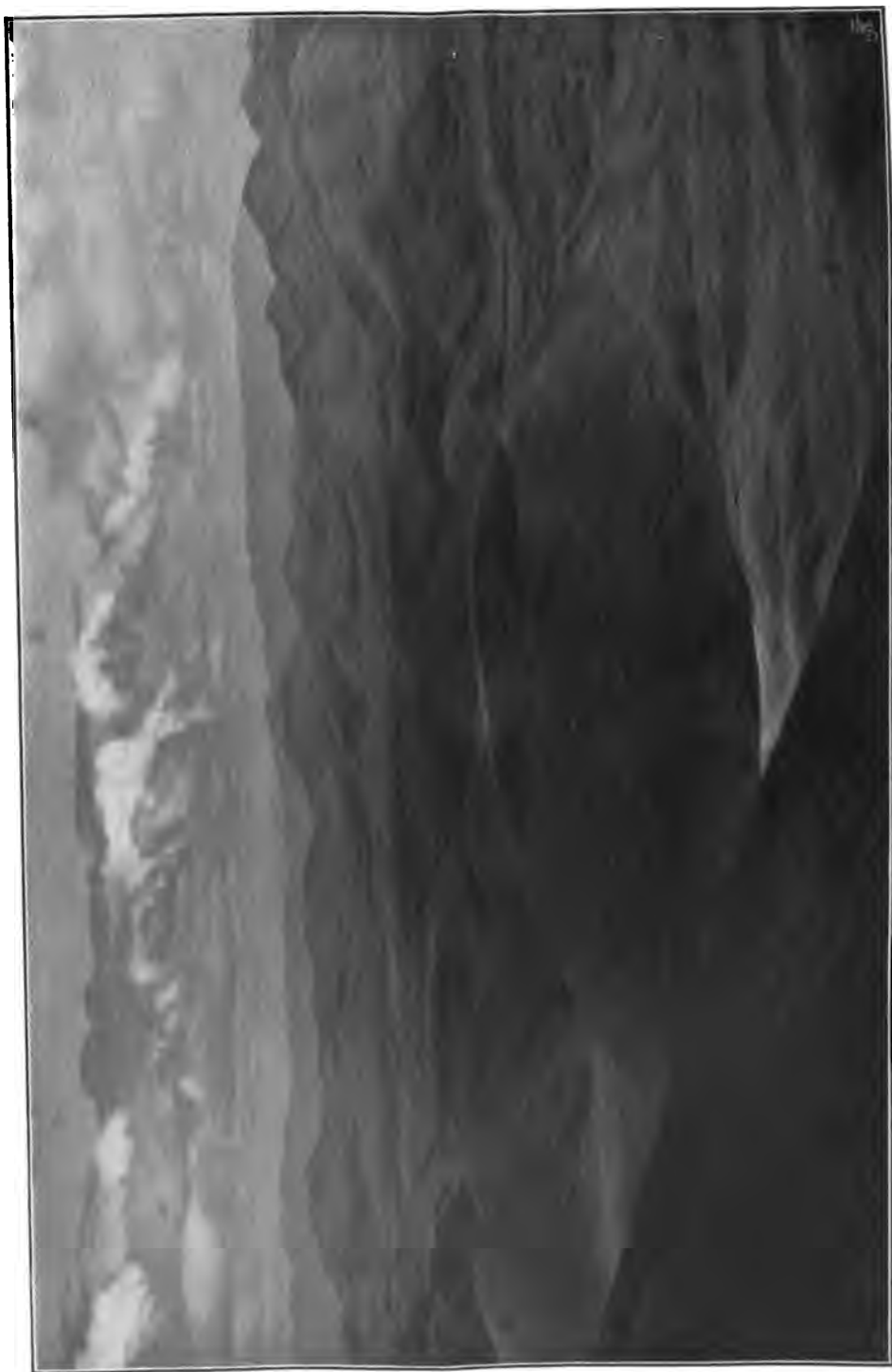
By the end of March Kirschstein had finished his labours in the volcanic region. As a result of his activity it was possible, through the kind offices of the White Fathers at Ruasa, to send off to the coast no fewer than seventeen loads, with lavas, scoria, bombs, sublimation products, etc., from the Virunga volcanoes, as well as two double loads of photographic plates. He himself wended his way over Ufumbiro and the lava fields lying to the north of the volcanoes, towards Rutschuru.



ALPINE MOOR WITH *SENECIO JOHNSTONII*, KARISSIMBI



CROSSING A RIVER ON A LAVA FIELD, MUHAWURA



VIEW OF THE CRATERS, NORTH-EAST OF MUHAWURA

CHAPTER VII

TO LAKE ALBERT EDWARD

OUR sojourn in a land like the Congo State which forms a centre of international interest, and into the administration of which we were privileged to obtain a glimpse, naturally calls for a review of some sort, or at least a comparison with the conditions and institutions of other African territories which are under foreign rule. The reader might expect that at the beginning of the chapter which deals with our stay in the Congo State the questions of greatest interest, such as the administration of the country, the exploitation of its products, or the native question, would be fully entered into. I crave his indulgence if I do not fulfil his anticipations. Firstly, any attempt to deal with such questions would far exceed the limits of a simple narrative of travel, and, secondly, I would not presume, after a stay of only seven months in a country, which it would take years to know well, to form any conclusive judgment concerning it.

One idea that has become general, however, I will most firmly oppose, namely, that the policy of the Congo State is only concerned in depriving the population of its rights and depleting it for sordid mercenary gain. It is true that there have been isolated instances of cruelty, and cases where officials lacking in understanding have misused the powers confided to them by excess of zeal, or in an attack of "tropical frenzy," and this is not denied by the Belgians; but these are things which happen in the colonies of every nation. It is impossible to prevent their occurrence in countries where the indolence and the behaviour of the people necessitates the strictest discipline to promote the development of the countries' great wealth. The natives of the

Congo State are certainly treated with an extremely firm hand, but they are not overworked. Even in the great rubber districts where the inhabitants are hostile, the reason is not to be sought for in oppressive conditions of labour. The daily work of an artisan in Germany far exceeds that which is turned out by the negro. The true reason of the antagonistic attitude must be looked for in the inborn dread of any compulsory, steady bodily exertion, which is a cause of resentment with most negro races, as well as with the dwellers in the virgin forest.

I should like to record here that we met with many exemplary institutions in the Congo State in comparison with which the excesses of one or two individual officials are of no importance whatever. The treatment of the natives might in many cases be termed too humane, so that it often heavily handicaps the administrative officers. An officer of a *safari*, for instance, may only punish with castigation the people who are in his permanent pay (Askari, "boys," etc.); he is powerless as regards the carriers. He is even bound to report any offence committed by a carrier in the first instance to the proper *Chef de zone*, or chief of the station, who again must employ a European and not a coloured man to bring in the offender. If a native is to be arrested at a European outpost and he happens to be on the spot, he may not be detained there. The punishment usually consists of detention in irons or imprisonment; the flogging of non-employees is prohibited.

Now it is sufficiently well known that travelling in Africa is impossible without the maintenance of the strictest discipline and the use of flogging as a punishment for disobedience. This is the experience of all those who have travelled with a large *safari* for any length of time. Where severity is not combined with justice and fairness, where the European after full inquiry is not empowered to punish the offender as he merits, there the discipline which is absolutely imperative in any caravan, as well as the authority of the white man, speedily disappear. The negro respects only the man who proves stronger than himself. Power impresses him, not mildness or clemency; the latter only



**A SOLDIER OF THE
CONGO STATE**



SOLDIERS OF THE CONGO STATE

excites his contempt or scorn. It is only the white man who has never travelled alone with a large caravan, absolutely dependent on his own force of will, that can fail to recognise this fact.

Is an official to blame who, where driven to desperation by the insubordination of the carriers, and fully familiar with the punishment laws, breaks senseless injunctions in the full knowledge of the irregularity he is committing?

As the reader may already be aware, the entire Congo State is divided into a number of districts, the largest of which are subdivided into zones and *secteurs*, the smaller into *secteurs* only. They are governed by Belgian officers, or by officers of other nations who have entered the Belgian service, and who are employed in the civil administration. The military, again, are subordinate to special officials.

Of the many institutions in connection with the administration of the *État Indépendant du Congo* with which we became acquainted, I will make brief mention of the system of taxation only:

The amount of the poll tax is determined by the *Chef de secteur*. The ordinary rate amounts to one franc in the month, or twelve francs per annum. In cases of non-payment, which constantly occur, a monthly labour liability of four days (forty hours) comes into force. Every worker, however, is compensated with twenty-five centimes. Payment is tendered in beads or cloth. Coin is unknown.

The black understands quite well how to clothe himself with the stuffs received. The hands employed permanently at any station go about chiefly in wide trunk-breeches made of very elegant check stuff. A blue jacket is usually worn, and the head gear consists of a thick, heavy straw hat with a very broad brim and a high crown tapering off towards the top.

The troops are recruited from all parts of the State, and are stationed as far as possible from their homes. They consist throughout of powerful men of a good appearance, the best types coming from the Uelle territory. The men wear a serviceable uniform, consisting of a short blue, red-piped jacket and

wide knee-breeches held up by a red sash at the waist. A red fez decorates the head.

The soldiers are armed with a type of rifle once used by the Belgian army, but now obsolete, called the Albini. The shooting capacity of this weapon is so faulty that it is perfectly excusable to miss an elephant at fifty paces. Contrary to the usage of German native troops, these men go barefoot both on parade and whilst on service. It is only on the march that a kind of sandal shoe is worn, which is fastened over the instep by a leather strap, and allows free ingress and egress to water.

The troops are trained at three great camps on the Congo, which we visited later on; and there, too, the recruits receive their military education. Under the direction of European (mostly Scandinavian) officers, about a thousand men are drilled into serviceable soldiers in a one to one and a half years' course, whereupon they are apportioned to various stations in the interior. The camps present an almost painfully clean appearance, and the care shown for the men is most exemplary. As an instance, every soldier—nearly all are married—dwells with his family in a small house of his own.

The term of service is seven years on active service and five years in the reserve.

Contrasted with the coolness of the Ruanda climate, and the cold of the volcanic region, which had greatly eased our arduous marches, we found the sudden heat very oppressive when we descended to the Rutschuru plain, which lies sheltered north of the western group of the volcanoes. From high-lying positions averaging 1,600 metres in altitude, the agreeable coolness of which we had enjoyed for the past few months, we descended to an altitude of about 1,000 metres.

The path brought us before long to a fairly thickly populated district in which agriculture was carried on. At Busuenda, Lieutenant Vêriter, who had been appointed to us for the time being as escort, reported himself to me.

Busuenda lies tolerably high. On clear days one can discern



THE MARGINAL MOUNTAINS AT MAJI JA MOTO



CROSSING THE SEMLIKI AT MAJI JA MOTO



CANÓN FORMATION AT MAJI JA MOTO

with a glass the glistening surface of Lake Albert Edward, five days' march distant, and the outlines of the snow mountains of Ruwenzori some hundred and fifty kilometres away. From here the path drops steeply down into the Rutschuru plain. The lower one descends, the more luxuriant grows the grass between the villages.

At the foot of the hill, where the post of Rutschuru lies, we crossed the wild-rushing River Rutschuru over a passable bridge—the only one I had seen until then in the Congo State. A broad road led up to the post, at the entrance to which we were received by the Commandant Supérieur Derche and others, and a company of soldiers some 150 strong, who, then and also later in the march past, made an excellent impression.

Rutschuru consists of a small fort with walls and moat, the Askari village, 300 metres away, and a few thatched European houses. It is the seat of the *Chef de zone*, Captain Baudalet at that time, and the *Chef de secteur*, whose functions during our visit were fulfilled by Lieutenant Spiltoir.

We passed two or three days in most friendly and agreeable hospitality, and then we were obliged to push forward in the little-visited district of the northern Rutschuru valley. By easy marches through the perfectly level plain we arrived at Maji ja moto ("Hot water"), which owes its name to the hot springs which gush out of the rocks. The water is exceedingly hot, the highest temperature taken by Kirschstein being 90 degrees Celsius. According to our analysis it appeared to be a fairly pure carbonate of soda water with a slight alkaline taste. A smell of sulphuretted hydrogen was very noticeable. Ferrying over the Semliki was not devoid of danger, for the current rushed along so furiously that it was impossible to keep a boat in position. We were consequently compelled to fasten long ropes to the nose and the stern-post of the dug-out and construct a sort of flying ferry. The pressure of the water against the side of the boats was so great that they often lurched dangerously and were in peril of capsizing; each contained about six people and their loads.

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The camp was encircled with a stockade to form a protection against lions, which were fairly prevalent, and it was therefore very cramped. Our stay was in consequence hot and anything but agreeable. The fence had proved itself necessary, however, as lions had previously broken in and destroyed human life. The audacious marauders had not been daunted by a leap of more than three metres over the high hedge. Only a month before I arrived, a sentinel on duty at the exact spot where my tent stood was seized by one of them. He only owed his life to the fact that the lion, frightened by the screams in the camp, abandoned his victim and, springing back over the fence, fled away.

We came across fresh tracks which led close along by the fence, and we several times heard roaring. As we intended to shift our camp to the steppe as quickly as possible, turning off in an easterly direction, the abundance of lions in this region suited us very well. The whole Rutschuru plain from Maji ja moto to the southern end of Lake Albert Edward simply swarms with game. Wherever one looks the plain is covered with immense herds of antelopes. Yet, as in the whole of Central Africa, the number of species met with is fairly limited. The chief are the water-buck, moor-antelopes, reed-buck, duyker-buck and jimära (lyre-antelope). Buffalo may be seen daily in great herds in the bush, which concentrates into a forest-like growth towards the lake. We also often observed the ugly forms of dicotyles. They prefer the neighbourhood of swampy places and river courses, although they are also encountered in the middle of the wide plain. As the dicotyles are accounted a particular delicacy by the lion, their presence partly explains the considerable number of lions in the district.

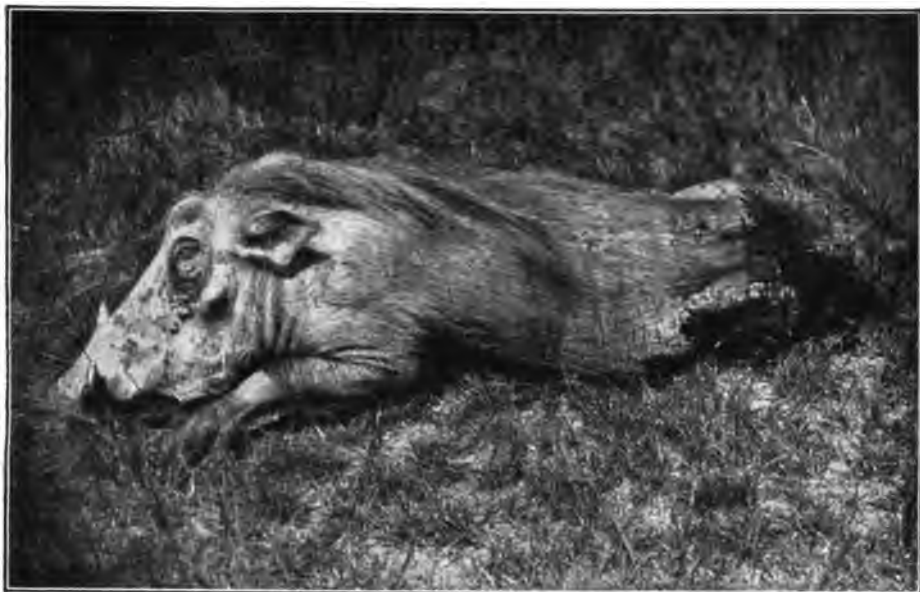
The Belgian officers, generally speaking, hunt very little, and, indeed, the only game shot is used for commissariat purposes, so that there does not appear to be any immediate danger of these shooting-grounds being depleted. The Rutschuru steppe is a bare, level track, broken by light acacia growths. It was covered with low grass reaching to the knee at the time of our



WATER-BUCK (FEMALES) ON RUTSCHURU PLAIN



MOOR ANTELOPE



DICOTYLE



LION KILLED AT MAJI JA MOTO, NOVEMBER 16, 1907

visit. The steppe is intersected longitudinally by a broad, deep ravine, at the bottom of which flows a shallow watercourse. This brook is overrun by a palm thicket, and is a favourite haunt of beasts of prey, particularly lions and leopards. It was there that we proposed to fix our headquarters.

Long-sustained roarings, disturbing the nocturnal peace, raised hopes in Vériter's and my own breast that some of the beasts might be visible when we tramped through the dewy grass at daybreak. And we soon had the good fortune to have our expectations realised. As the red disc of the sun shot out its first rays to greet us, I saw the dark form of an immense male lion slouching through the grass straight ahead of me, the tips of the great mane and the line of the back showing up strongly against the light. Having stalked him for some distance, it was not difficult to bring him down. At the first shot he wheeled round growling; at the second he lurched sideways and fell into the grass. Whilst inspecting the spoil, casually raising our eyes to the west we saw the beginning of a violent eruption of Namlagira. The column of smoke, wonderfully illuminated by the morning light, worked its way upward in massive rolling clouds, and, widening out as it rose, was dispersed in ever-increasing circles.

This single hour made amends for many a hunting failure. To have shot a lion whilst in view of an active volcano! Not many persons have had such an experience. To attain the victory over the mightiest beast of prey with the mightiest spectacle which Nature can offer as witness—was there ever such luck?

Having skinned our prize, we proceeded further in the direction of the ravine, and took no further notice of the numerous game all around us.

This gorge proved to be one of considerable difficulty for a caravan to cross, and we had to construct a special road. A steep path was struck through the brushwood to the bottom, and was made passable for the load carriers in the swampy places by heaping up palm branches. This work finished, we lay down to a well-earned rest, expecting the caravan to arrive

in about an hour's time, under the conduct of Raven. Suddenly we heard shots in the distance, and, jumping up, we made out Raven and Weidemann, accompanied by two Askari, climbing down the opposite side of the ravine with their guns in readiness, some 300 metres from where we lay. I snatched up my gun and rushed to the scene.

"What's the matter?"

"Lions!"

"Where?"

"In the gorge."

"How many?"

"Three; here are their tracks. One is wounded, for there's blood here."

I signed to three Askari and we occupied the edge of the ravine on our side to prevent the beasts escaping. As further search proved useless for the time being, we decided to continue it in the afternoon, and set up camp scarcely 400 metres north of the edge of the ravine. Unfortunately I was obliged to forgo further participation in the hunt as some very pressing correspondence confined me to the tent. In any case, I entertained no further hope of success; I did not think for a moment that it was possible for the two unhurt lions to be still in the vicinity. But I was mistaken; for hardly were the two Askari whom I had sent to spy out the land and bring back any news, out of sight, than one of them, the Masai, Abdullah, came flying back making signs in the distance. Now or never! Pen and paper were thrown aside. Jamming my hat on my head, I snatched up my rifle and loaded as I ran. In the meantime Abdullah had reached me. "Quick, quick, *bana*; there are two big lions lying there and sleeping, *karibu sana*—quite close."

Two minutes later I examined the perfectly fresh tracks and the warm place where the two maned lions had been surprised in their sleep at fifty paces by the Askari. In fact the bushes had scarcely ceased shaking at the places where the beasts had vanished in the thicket. That wretched scrawling business! The reader must forgive me if my hunting ardour conquered the



BUSH-BUCK



LIEUT. WEISS WITH A LIONESS KILLED AT MAJI JA MOTO

interests of science at that moment. Three lions ought to have been recorded in our shooting book on November the 14th!

The next morning quite fresh tracks were recognised in the wet grass in this memorable ravine, which we, of course, followed up. After three hours' stalking we sighted the quarry at 200 paces, although the tall grass gave only very fleeting glimpses of the beast. I levelled and aimed, but could not fire as he kept diving down into the grass. As he appeared to be escaping altogether, I fired at last, trusting to luck, and—missed!

I was, however, more fortunate the next day. We had found by experience that the rapacious creatures were in the habit of visiting the ravine at early dawn, after their nocturnal prowls. The place fell away in terrace formations from the east, and as it was chiefly from that direction that we heard the roaring at night, we took up our position to the east of the ravine. Raven, Vêriter and I spread out, the Askari between us and within sight. As the country in front of us could be overlooked far and wide, no animal could enter or leave the gorge without being observed. Further, a particular signal was agreed upon with the Askari, so that in case of a lion being sighted the nearest marksman could be apprised without delay. I had not waited long at my post at the right end of the deep gorge before I heard the deep growl which had become so familiar to me, at first in the distance, then growing nearer. I decided to climb through the gorge and, if possible, advance to meet the lion. I had hardly reached the other side when a repeated roaring advised me of the right direction, although it was seven o'clock and quite light. Suddenly I saw my fine fellow trotting along through the grass about 300 metres in front of me. I ran towards him as fast as my legs would carry me, accompanied only by my boy, Almas. This manoeuvre succeeded. The lion also started running, and as I caught sight of the upper half of his body, I potted him at 120 paces, causing him to reel to the side for a pace or so, snarling irascibly. I then fired another shot at his rear, which must have penetrated him nearly longitudinally. Badly wounded and almost breaking down,

he dragged himself some thirty paces further to some bushes, where he fell. Approaching nearer to give him his quietus, I found this to be unnecessary, for the lion was dead.

When I sighted this animal there was plenty of wild game near, yet I did not notice that the proximity of their enemy caused them any uneasiness. I therefore do not share the view that the small game disperse in wild flight when a lion appears. On many occasions I have from a distance observed a lion moving round in the grasses of a plain abounding with game, yet I only noticed signs of uneasiness amongst the antelopes stationed immediately in the marauder's path or browsing near. Animals further away contented themselves with merely a careful glance. But I have never seen the creatures excited on hearing the roar of "the king of beasts."

I do not desire to put my readers' patience to too great a test, and so will mention briefly that on the next day some of the carriers, whilst searching for wood in the immediate neighbourhood of the camp, came across three lionesses and four big cubs sleeping in a gully of the gorge already mentioned. Unfortunately, the man who brought me the news arrived at the very moment that I bagged a reed-buck for our larder, and though I was on the same side of the ravine as that where the lions lay, I was quite unconscious of their presence. The camp was immediately in commotion, and everyone was gazing attentively towards the spot where the lions, roused by the shot, were fleeing.

Again my mood was hardly of the merriest, for had the man reached me a few seconds before I fired my shot at the reed-buck, I should without doubt have easily got within good shooting distance. As it was, I only succeeded in hitting a young lioness after a lengthy chase, who, injured by a wound in the intestines, concealed herself in a thicket, and was found dead the following day.

Returning from the search for her body, I shot a leopard, the only specimen I have ever encountered in Africa by daylight. This little incident was not without a trace of piquancy, for,



BUFFALO COW KILLED AT THE MOUTH OF THE RUTSCHURU



A BUFFALO KILLED ON THE RUTSCHURU PLAIN

having followed the blood trail, I espied the spotted skin of the dangerous cat gleaming through the foliage of a bush, and as I took aim it sprang out at me like a flash of lightning. A very lucky snap-shot, which pierced its neck, settled the matter, and it rolled dead almost at my feet.

We now shifted our camp further north. In order to reach the spot, Vériter and Weidemann had occupied themselves with the Askari for a few days previously in throwing a bridge very dexterously over a small but very deep tributary of the Rutschuru. This had proved itself to be necessary for the conveyance of the loads. Shortly before, Raven had been compelled to reach the further bank by swimming.

The landscape to the north of this small river had something of a park-like character about it. We pitched our tents very widely apart under some fine old acacias, and connected them by narrow paths which we cut through the knee-high grass. Light groups of acacias dotted about almost conjured up visions of some fine old English park.

The land became more densely overgrown towards the eastern side. Near the Sultan Kikamero's village the vegetation at times assumed the character of a forest preserve. In these places we often caught sight of hamlets encircled by barricades of thorn. In earlier days the western margin of the steppe is stated to have been much more thickly populated; and it is said that the lion pest drove the people away. As a matter of fact, we passed by many places where potsherds and fragments of all sorts lay scattered around, and where the ground plan of a former village was still recognisable in spite of the choking brushwood.

Towards the north the ground, which is much riven with clefts, falls away gradually to Lake Albert Edward, and there again assumes the aspect of the steppe. Numerous shell remains indicated that we were on the ancient sea-floor, and that the waters of the lake must at one period have completely covered the district. From here we could already recognise the sparkling surface of Lake Albert Edward, and, aided by a telescope, we could descry the vast hosts of pelicans which inhabit the white

islands and the sand-banks at the mouth of the Rutschuru, or swim around and fish in great flocks.

Bush-buck and buffalo were strongly represented. The species of buffalo that we saw almost daily on the open steppe, or chanced across in the light bush, showed some similarity to that of the Kaffir buffalo. The horns had strong projections, but were rather more compact than the East African variety, and the points inclined more upwards. One fine creature killed by Schubotz in the course of an afternoon's "saunter" in the neighbourhood of the camp had a breadth of horn over the forehead of 33 centimetres and a span of 106 centimetres.

Generally speaking, the colour of the buffalo we found in the Congo State was dark. The smaller western breed, with horns lying over towards the back, formed in the main no exception to this rule, though a lighter colour was much more common here than amongst the Rutschuru animals. Mildbraed sighted a herd of some forty buffalo later on the eastern margin of the great forest near Kifuku, which gave a variegated and chequered impression through its mixture of shades. As the lighter coloured ones were mostly smaller than the darker, it might, perhaps, be correct to assume that the lighter coat indicates the young of the herd. For this reason I doubt the accuracy of the designation "red buffalo" that is frequently applied to the western type.

This abundance of big game was most lucky for us, for our scanty stores of provisions was noticeably diminishing, and the fresh meat of these large animals enabled us to eke them out. We had had no sugar or milk for some ten days, and our tins of preserves had greatly dwindled. The supplies for our carriers, too, were in rather a critical condition. It was quite out of the power of the natives of the few inhabited spots on the eastern marginal mountains to supply us with stores, and as the nearest depot was at the northern end of the lake, nothing remained but to strike camp and advance at a somewhat quicker rate.

During the last night of our stay we were treated to a



BANKS OF LAKE ALBERT EDWARD AT ANGI

genuine African farewell concert of such power and grandeur that our regret at departure from a country that had so much to offer was greatly increased. Five lions howled and roared the whole night long outside our camp, so that sleep was out of the question, and we sat up on our couches listening. Then when the piercing cries of a trapped hyena, almost human in tone, rang out, there was such a scene that I rushed from the tent into the bright moonlight in order to make sure that no human life had been sacrificed.

I could not deny myself the pleasure of one little excursion in the vicinity of the nocturnal concert. Following up three new trails we had our lions before us before an hour had passed. Whilst two of the creatures rapidly fled, one lioness ensconced herself in a ditch grown over with tall brushwood. Shouts and stones proving equally futile to induce the beast to leave her lurking-place, we had recourse to a well-tried expedient which never fails—we fired the bush. Some commotion amongst the foliage followed. The shaking of the leaves and furious growling showed plainly how unwilling the brute was to leave her hiding-place. Not until the fire, which was burning badly in the damp atmosphere, had almost scorched her hide, did the lioness appear. She leapt out of the shrub, but, struck by my bullet, toppled over like a hare the next moment and lay still. Before she could rise again a final shot in the neck terminated her predatory career.

Returning to the camp, I found Czechatka and the Belgian non-commissioned officer Dewatt, who had come over from the Vitschumbi station at the southern end of Lake Albert Edward. Czechatka had been commissioned to march direct to Vitschumbi with all superfluous loads, and to set out from there to find us. Dewatt brought fresh vegetables, and Czechatka had a case of stores, which happily put an end for the time being to our most pressing needs.

Gradually getting into lower altitudes, we reached the southern banks of Lake Albert Edward on the 28th of November. The nearer one reaches the lake, the shorter grows the grass and

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the greater become the deposits of debris and shells, evidences that the country was formerly under water.

The plains gradually dip into the watery surface, from the slimy subsoil of which thickets of reeds and rushes shoot up and border the southern parts of the banks as with a broad ribbon.

The ornithological wealth of this part of Africa is amazing. Pelicans move about in thousands on the southern banks of the estuary of the Rutschuru, and sport peacefully amongst the numerous hippopotami in the narrow dry places. The hoarse cry of the heron is intermingled with the dull tones of the bittern, or mire-drum, and the snow-white plumage of the *ardea nobilis* contrasts effectively with the dark green of the reeds. The swarms of marsh and water-hens are indescribable as they flit light-footed to and fro on the water grasses and fearlessly suffer the approach of our folding boat, whilst the air is filled with immense hosts of white and grey gulls. Wild duck and geese of the most varied species rush through the air with whistling and flapping of wings. There is a twittering and chattering of innumerable little songsters amongst the reeds, and on the margin the rosy tantalus ibis, in company with the marabou, fishes warily for his sustenance in the shallow water.

Picture to yourself the evening scene: The yellow steppe covered with sappy-green trees surrounded by mountains shadowed by black clouds, which rumble and flash; then suddenly the blood-red sun shoots forth, and illumines the whole, painting the cloud-edges pink. The beautiful tints of a rainbow suddenly gleam out. Gazing at all these splendid tones of colour, which are reflected again on the water, one doubts whether the richest palette which painter ever held could reproduce such magnificence.

Thanks to the courtesy of the Belgian officers, the two Congolese Government steel boats stationed on the lake were placed at our disposal for our journey across. A number of native boats also awaited us. As they were only able to take a small part of our loads, Weidemann was commissioned to conduct the main caravan along the east bank to Kissenji, which we hoped to reach



MOOR ANTELOPES



THE SOUTHERN END OF LAKE ALBERT EDWARD AT KATANA

after a boat journey of two days. Dewatt wished to accompany Weidemann thither. Czeczotka was instructed to set out on the difficult march by way of the western marginal mountains to Kasindi. Weidemann and his caravan were compelled to make long detours because the road to the south-east of the lake was closed by extensive swamps, which swarmed with hippopotami. All things considered, this march promised to be far from enjoyable, as the surface of the lake had risen through frequent downpours of rain during the last few days, and had overflowed the banks. No choice was left, however, and the caravan set off on its journey, accompanied by the somewhat ironical good wishes of those who remained behind.

Next day, as our small flotilla glided along the eastern banks, we passed great herds of hippopotami lying lazily in the hot sun on the sand-banks or stretching their coarse heads out of the water, puffing and snorting noisily.

As all the boats have to be propelled by means of long poles, we always kept in the shallow water close to the banks. The fishing folk venture very reluctantly into the middle of the lake, and with good reason, for the squalls which frequently rise churn up the water into large waves, which seriously imperil the fragile and usually leaky boats. The boats on Lake Albert Edward were of a very different type from those which we had previously met with. Isolated specimens of dug-outs are occasionally seen, but the majority of these craft are fashioned out of thin planks joined together with bast fibre. As this primitive method of boat-building is very inadequate, the water sometimes streams through the side planks in heavy jets, and has to be bailed out constantly during a journey.

We landed at the small village of Katanda after a voyage of five hours in the glowing heat. The construction of the place afforded quite a new and remarkable sight to us, for resting on rafts, it floated in the centre of a creek of the lake abounding in reeds and rushes. Unfortunately the population had fled in fear at our approach. No human being could be seen; only a few hungry dogs howled dismally from the roofs of the huts. As we

entered the village the ground rocked at every step, and at the edge even sank below the water line. In the centre it was stable. As the inhabitants, who belonged to the Wakingwa race, had nearly all their household effects with them, we came across little worthy of mention excepting some beautiful plaited work. As there was no one from whom we could make purchases, we left everything standing in the huts as we found it.

Hot as it had been during the first days of the journey, we were to experience cold later. A few minutes after our departure from the floating village a torrential storm of such violence broke over us that further progress was impossible.

Being unable to make any headway against the storm, or to see ahead of us on account of the streaming rain, the boats were soon piled on the shore, with their bottoms turned towards the slant of the rain. So we remained sitting in our boats with the waves splashing up over the gunwales. We had to sit still until the raging gale subsided, for no human efforts were of any avail in the face of such an outburst. The storm, as usual, did not last long, but a fine rain kept drizzling on for some time, which sufficed to chill us in our thin clothes, which were wet through in spite of our mackintoshes.

Presently a small boat propelled by two men with long poles came swiftly towards us. "*Barua, bana*—letters, master," they cried. A heavy bag was handed over and immediately opened. It was the European mail, greetings from home, which reached us there in so strange a fashion. They shortened our lengthy journey in a most agreeable fashion, for it was four o'clock in the afternoon, after ten hours' travelling, before we sighted the huts of the small hamlet of Kissenji lying ahead. There we landed, glad to be able to stretch our stiffened limbs.

We remained one day for Weidemann's caravan, which we had arranged to meet here. It came along late in the evening in a perfectly exhausted condition. They had had a hard time of it. The floods had assumed unexpected dimensions. For hours the men had been forced to wade along in water up to their thighs, and in places even up to their necks; the mules and dogs had to



THE FLOATING VILLAGE OF KATANDA, LAKE ALBERT EDWARD



INTERIOR VIEW OF THE FLOATING VILLAGE OF KATANDA

swim. Ropes had to be stretched across the deepest places, by aid of which the carriers, who could hardly touch the bottom, had to feel their way. Occasionally they floundered into holes, and momentarily disappeared with their loads under the surface of the water. Although the memory of this very unpleasant march will doubtless long remain with them, none of them, fortunately, sustained permanent injury.

I profited by the day's rest we allowed ourselves to make a little excursion into the interior, but found nothing of remarkable interest. After going over a terrace-shaped formation we reached a high-lying plain, where we came upon some straw mattresses, bearing witness to the activity of the English Boundary Survey Commission, which had been working there about six months previously. The question at the time had been a re-examination with respect to the thirtieth degree longitude, which marked the boundary between the Belgian and the English territories, as some dissension had arisen between the two countries with regard to its true position. The British as well as the Belgian Commissions entrusted with the work had meanwhile moved further north, and were quartered on the River Semiliki in the neighbourhood of Ruwenzori.

The population there is fairly large. Agriculture and the breeding of small stock are the chief pursuits. The natives know how to make the latter pretty lucrative, as the prices for sheep and goats often run exceedingly high. Whilst we only had to pay very moderate prices in German territory, the prices here rose to two or three *doti*; that is, four to six arm-lengths of stuff, three to five rupees in value. This rise in prices is increasing constantly in districts inhabited by Europeans. Thus, for instance, at Stanleyville and also on the Aruwimi a sheep costs twenty-five to thirty-six francs, a fowl or duck five francs. As such high prices would have ruined our treasury, and as we could not take a herd of small stock with us, the feeding of our caravan followers became a difficult question. Lieutenant von Wiese endeavoured here, where the prices might still be called moderate, to acquire a small stock, which would provide us with meat until we reached

the Aruwimi district. The shyness which the people of Waronda and Wasongora first exhibited made this awkward to arrange. However, on our putting the matter before Sultan Kasigano at Ruisamba, where we arrived the following day, he was persuaded to send us a few animals.

Ethnographical material was scanty and of little interest. This district forms, as it were, the boundary of the eastern and western types and languages. We therefore met again many people with whom our stay at Lake Kiwu and Uganda had made us familiar both with their forms and language; but we came across a few special peculiarities.

The Wasongora just mentioned should really be called Bakondjo, for according to Czekanowski's researches Wasangora is a common designation for people with pointed teeth. *Kusan-gora meno* simply means "pointing the teeth"; and Usongora would be the land where the inhabitants chip their teeth to points by means of an iron chisel, a habit frequently met with among the Bakondjo. Now, as the pointing of the teeth is a typical feature of all tribes who indulge in cannibalism, we may not be far wrong in assuming that the Bakondjo were formerly addicted to this ghastly practice, even if they have now abandoned it. This is all the more probable, as cannibalism is still in full swing in some parts, as, for instance, in the entire region of the primeval forest.

The pest of gnats and flies at Kissenji and on the steep banks of Lake Albert Edward was simply dreadful. Myriads of tiny, little insects buzzed in the air the instant the dawn broke. They appeared in such hosts and covered the tables, the tents and their inner sides in such dense masses, that my pencil was continually rubbing the creatures into the pages of my diary and making the writing quite illegible. At supper time we were always compelled to set up the lamp on cases ten paces away in order to protect the soup from the crowd of descending insects. The tents had to be pitched close to the edge of the water, almost touching the reed masses, on account of the swampy ground; and such an unpleasant smell made itself apparent that our stay became utterly intolerable.



**A CANNIBAL FROM THE BORDER MOUNTAINS OF THE CONGO
STATE**

At Ruisamba a number of boats were lying on the beach, and these we requisitioned for the passage across the elongated arm of Lake Albert Edward. But out of the large number of craft there were very few capable of reaching the opposite banks without first going under. Most of them proved to be so leaky, that it was impossible to put loads into them. Thus our transit in the few intact boats lasted some hours. In consequence, we set up our camp quite close to the shore on a high-lying plateau, which commanded a splendid view over a wide part of the lake. We were not left long in the enjoyment of the fine prospect, for soon the lowering clouds rolled themselves together threateningly, and a storm of hurricane nature swept down over the lake, lashing and churning its waters. It rushed over the camp, threatening to upset all the tents, and ended by ripping off the roof of our mess-tent and carrying it high into the air.

Travelling by way of Njama Kasana—where elephants were once numerous, but latterly have retired more to the Semiliki plain—Kasindi was reached on the 6th of December after we had passed through a broad euphorbiaceous steppe. Monsieur Boisac, the *Chef de poste*, received us at the top of the terrace-shaped formation on which the village is situated.

Kasindi is quite a recent and but a temporary station. The houses are built of a light material—*matete**—and had fallen badly into disrepair in consequence of the violent storm. In parts they had to be kept from falling down by strong beams. Vermin of every description housed there, the rats whisked about the place as we messed, and their feet could be seen in the canvas cover spread as a canopy, like those of rope-dancers in a net.

The station itself lies on a desolate, treeless steppe, and is just an hour's distance from the lake, which can be overlooked for miles around. A small wood of acacias, which is a frequent haunt of elephants, extends from below the station to the shores of the lake. Away over the ranges of low hills which close Kasindi in on the northern side, the snow-capped summits of the Ruwenzori chain, which may be seen for a few moments in the

* *Matete*, elephant grass about $\frac{1}{2}$ inch thick.

early morning hours, formed the sole point of attraction for the roving eye.

The force stationed at Kasindi consists of about a hundred men, who are quartered in a special village (Askaridorf) near by. We only saw a small number of them, as the remainder had been despatched to re-erect the St. Gustave Mission Station, which lies a few hours away to the north.

As we had some time in hand before our conference with the other members of the expedition at Christmas, and as reports and mail matter had been attended to, we used the few days at our disposal to make excursions on the Semliki. From reports of the natives of "many sick people" and of the tsetse-fly being prevalent, we expected to find many cases of sleeping sickness, and resolved to devote our outing to an examination of the blood of the inhabitants of the Semliki valley.

As we also hoped to come across a good many elephants and much game, we took a sufficient number of test tubes with us, such as are used in medicine, for collecting specimens of blood from cuts or wounds for microscopical examination.

It was very important that we should use all the means in our power to examine the blood of any elephants we might kill, and discover whether it contained the germs of sleeping sickness. Through Raven's efforts, ably assisted by Weidemann, many hundreds of the shore dwellers on Lake Albert Edward, particularly on the Semliki side, were subjected to examination. Indications of *trypanosomæ*, however, were not discovered. Unfortunately we were unable to carry out the examination of the elephants, as Raven met with an accident just as he was about to begin the microscopic investigation, and was confined to his couch for months.

There can be no doubt as to the activity and danger of the sleeping sickness in these districts, for in an isolated little house in Kasindi there were two patients, husband and wife, whom we visited daily and in whom Raven interested himself a good deal. The wasting effect of the terrible disease could be clearly observed on this couple. When we first arrived the patients were able to



THE WESTERN MARGINAL MOUNTAINS AT AMAKOMA, LAKE ALBERT EDWARD

move about and cook their provisions without any assistance, but after ten days such a change for the worse set in that they simply sat in their huts absolutely inert and helpless, with staring eyes and limp hands. As we were unable to aid them, they grew rapidly worse, and in fourteen days they succumbed to the disease.

This terrible evil, the spread of which has only been checked in a limited degree by the use of atoxyl, claims a vast number of human victims annually in the Congo State. The Government endeavours to suppress the malady with all the means at its command. The praiseworthy intentions of the State are, however, terribly handicapped by the apathy of the natives, who will not place themselves in the hands of the white man. Although later on we saw some excellently organised infirmaries in the Congo territory, they are only as a drop in the ocean, and the number of their inmates only forms a fraction of the sick population wasting to death far from human help in the dark depths and damp decay of the virgin forest.

The sport in the valley of the Semliki can hardly be compared to that of the Rutschuru valley, yet water-buck, moor-antelope, and reed-buck may often be seen. The abundance of elephants, on the other hand, exceeded all expectations. I cannot remember a day on which I did not sight one. At night time we could often hear them tramping round in the vicinity of the camp and the peculiar noise they make in browsing. In the morning we frequently discovered fresh traces left by them during the night in immediate proximity to the camp. Yet we did not even take the trouble to follow them up, but simply made for the clearer places in the acacia forest on the open bank, where they used to congregate rather later in the morning. Occasionally we met troops of four to eight, and sometimes herds of forty to fifty.

The Congo State endeavours as far as is possible to protect its enormous stock of living ivory, its main export. To this end it has created great reserves, in which the capture and killing of the animals is prohibited. On account of the difficulty of control, particularly in the vast forest districts, such prohibition is

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constantly set at nought. Yet these reserves are of use, for the natives know that they will be heavily punished in cases of infringement of the laws should they be detected. Those elephants which make serious havoc in the banana fields may be killed by special permission. European hunters are not allowed to enter the Congo territory without producing their licences from Brussels, and even then special sanction is needed for the killing of an elephant. A departure from this rule was made in favour of myself and the members of the expedition in a very obliging manner, so that we were enabled to devote a few exceedingly pleasant days to hunting the most mighty beast existing.

From among the many exciting incidents and interesting episodes which occurred, I take the following:

At daybreak on the 18th of December Vériter and I proceeded to the farther bank of the Semliki in order to enlist as guide the youthful chief of a settlement which lay in a deep gorge. We were going after a herd of elephants that day, expecting to find them five hours' journey farther northwards, where they haunted the banana plantations of a hamlet lying close to the river. The animals were so daring, that they not only destroyed the banana trees in the front of the village, but even attacked the huts. A man told us that he had had to fly from his dwelling whilst an elephant was tearing off the thatched roof. When we arrived the animals had left the immediate neighbourhood of the village, but our guide soon brought us in sight of the herd. We observed seven animals, one of whom, to all appearances a very powerful bull, detached himself from the rest and made rapidly for the protecting forest. Pursuit was useless, so we let him go. We then turned to the six others, whose massive, colossal bodies stood out in marked relief against a broad grass patch, which had been burnt away the day before and was now coal-black. As the scene made a splendid picture for the camera, I stalked up with that only in my hand, my boy with my gun close behind, to a bush near the elephants, when the pachyderms caught our scent, trod uneasily to and fro, and then lumbered off amidst a cloud of dust towards the Semliki. Two



WOUNDED ELEPHANT ON THE SEMLIKI



LAKE ALBERT EDWARD AT NJAMA KASANA

shots hurriedly discharged at the hindmost animal caused it to circle about twice, but were not enough to upset it; then it joined the troop and fled with them. We followed at the double as far as a terrace-shaped declivity, where the steppe ended at the river, whose bank was overgrown with dense reed and swamp grass. Here we came upon the troop again, which had waded into the river, but apparently could not make up its mind to cross it.

The animal, which had previously been wounded, was unable to follow with the troop, and as Vêriter, who had kept his wind best, came up and gave him another bullet through the head, it collapsed and lay as if dead. A carrier rushed up overjoyed, and with one cut divided the tail from the body. The hairs of the tail of an elephant are much prized by the natives; ornaments of all sorts, bracelets, neck adornments, etc., are fashioned from them. At the moment, however, that the carrier flourished the severed trophy in the air the supposed dead elephant furiously rose up and perceived his assailant. I arrived just in time to obtain a photographic picture of this indescribably comical scene, this abrupt transformation of the joy of victory into deadly fear. Whilst the carriers scurried away in all directions, Vêriter stood in perplexity before his opponent, searching all his pockets in vain for cartridges, with which he had thoughtlessly provided himself too sparsely. But the elephant was so injured that no further danger was to be apprehended from him, and on receiving a further shot from my rifle in the shoulder he rolled slowly over on to his side and expired.

I then followed up the remainder of the herd, and soon caught sight of a fine bull, who had already received a few bullets from me, standing alone and badly hurt at the edge of a small island in the river. First I took a couple of snapshots with my hand camera at about 120 metres' distance, and then I fired at him again. The elephant first advanced a few steps up on to the island, and then proceeded slowly through the tall reed-grass invisible to me, and through the stream on to the bank, where, after passing through some more grass, he finally reappeared at a considerable distance away. As a broad swamp now separated

us, I essayed in spite of the distance to bring him down with a bullet. This, however, only resulted in his spreading his enormous ears after each shot and throwing back his trunk aggressively. As he then threatened to vanish in the reed-grass, I decided in spite of the unfavourable wind, which carried my scent towards him, to cross the swamp till I got near and could venture a finishing shot. The way through the morass was terribly difficult, and we frequently got stuck up to our knees, in addition to which a fire which had raged round that part not long before had covered everything with a thick layer of soot, so that we were, or, rather, I was, soon unrecognisable with dirt, for my sole followers, the Askari, Abdullah, and my boy Mambo, were very little altered by the addition of the soot.

We finally worked our way through, and felt firm ground under our feet once more; but we had got into a belt of *matete*, which shot up nearly twelve feet high and prevented our seeing any distance in front of us. Nothing was to be seen of the elephant. In order to get a better view I climbed on to Abdullah's shoulders. But although a voice at my rear warned me, and a man on the terrace-sloped bank signed to me with his hands that the elephant was close by, I could only perceive a slight movement amongst the tops of the grasses. Believing the elephant to be badly hurt, I decided to approach closer. We had not gone many more steps when we became aware of rustling, crackling, and trampling sounds in the bushes, and knew that the creature had scented us and was preparing to charge. Unable amongst the tall *matete* to discern anything, we retraced our steps somewhat in order to get into freer ground. My two followers, however, lost their heads in the presence of the approaching danger, and instead of following me they decamped as quickly as possible, reaching a spot where they found their further passage barred by the stout stalks of the tall grasses. Here they got entangled, and in a desperate attempt to free themselves Mambo fell and carried Abdullah with him. At the same moment the mighty head of the elephant appeared with trunk extended. Perceiving the imminent peril, Abdullah put a leaden



ELEPHANT KILLED ON THE SEMLIKI, DECEMBER 15, 1907



THE SEMLIKI AT ITS POINT OF ISSUE FROM LAKE ALBERT EDWARD



**THE AUTHOR WITH THE TUSKS OF THE
ELEPHANT KILLED ON THE SEMLIKI,
DEC. 15, 1907**

**HEIGHT OF TUSKS - 2.53 AND 2.51 METRES (8 FT. 3½ IN.
AND 8 FT. 2¾ IN.)**

WEIGHT - 98 AND 94 POUNDS

bullet through his forehead at a distance of one pace only, which, however, only caused the elephant to kneel down and try to bore Mambo with his tusks. Unsuccessful in this, he seized the youth by the straps of the cartridge pouch, and tossed him high into the air.

I was unaware of these proceedings, as in my attempts to let the elephant pass I had slipped aside and fallen in the swampy ground again, where I stuck fast and could not move. I heard the cries and whimpers of my boy, and naturally struggled with all my might to free myself from the sludge and run to his aid. At the same moment the colossal form of the elephant burst crashing out of the *matete*, making straight for me. Fortunately a small shrub concealed me from his view; but to my dismay, lying on the elephant's tusks and held firmly by its rolled trunk, I observed a black body covered with torn-up reeds and grasses, and saw in a flash that Mambo was in a desperate fix. We were both in a most perilous position. If I succeeded in giving the elephant a mortal wound, and it fell to the ground, my boy's body would invariably be crushed. I had seen this occur in the case of a female elephant and her young. Should the elephant not succumb, he would doubtless first kill the boy and then me, as in my helpless condition I was practically at his mercy.

All these considerations flashed through my brain like a streak of lightning, but the elephant anticipated my conclusions, for when he was only five paces distant from me he seized Mambo firmly, and threw him some yards away into the tall grass, where the unfortunate wight lay groaning. Then, extending his ears wide, he rushed madly past me, a small bush alone dividing us, and disappeared in the *matete*. Mambo owed his life solely to the fact of the creature being badly injured, as, if the elephant had been in the possession of his full power, he would have not omitted the practice of his kind of trampling his enemy to death.

These last efforts had no doubt overtaxed the severely wounded animal. A little later we heard it collapse and succumb with long-drawn, wailing sounds.

Having at length succeeded in extricating myself from the

swamp, I contrived to get the almost unconscious Mambo into a place of safety. The poor fellow was in sorry plight. He had sustained a number of contusions, and was unable to walk. With great difficulty we carried him through the swamp on to the firm ground, and there we prepared a stretcher, on which we laid him. I collected my guns, camera, and cartridges, which lay strewn about; the stock of the gun was splintered, but luckily the camera had not suffered much; even the plate (facing page 186), which shows the elephant before the attack, had not suffered by the flight through the air. The next thing to be done was to cut out the tusks, a task which made no small demands on our time and strength. Late in the afternoon we were able to think of getting homewards, and reached the camp at length in perfect darkness after an uninterrupted march of five hours along the banks of the Semliki and after an absence of fourteen hours, during which time we had not rested for a moment. Two hours later the ambulance came in with Mambo. The negro's strong constitution brought him through; he progressed towards recovery every day, and after the lapse of a week he was able to resume his duties.

On the evening of the day after the hunting incident just related we were witnesses of a most thrilling display of natural fire-works. A steppe fire of unusual dimensions spread over the whole horizon, and traced out the contours of the mountains in an unbroken fiery line against the heavens.

In this district the natives kindle fires in order to clear the ground of the older grass-growths, and so make room for the fresh luscious young grass which game find so appetising. The latter, particularly the elephant, stand in no fear of fire, but assemble gladly at such spots to graze on the tender new shoots.

Generally speaking, the steppe fires are of an absolutely harmless nature, but once, on Christmas Eve, they nearly proved fatal to us. An immense line of fire rolled over the mountain ridges, making direct for the thatched roofs of Kasindi. The phenomenon being an everyday one, we took no notice at first, but



SALT LAKE AT KATWE
FROM A PAINTING BY W. KUHNERT

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suddenly we observed that the flying flames were only a few hundred metres distant from the dwellings. We summoned the Askari and carriers in furious haste, and started out to meet the sea of flame. After two hours' hard work we succeeded in beating out the heart of the conflagration. The two long tongues on either side, however, darted raging along to the right and left of the station.

On the 24th of December all our members, excepting Kirscheinstein, whose work in the volcanic region had rendered an extension of leave necessary, gathered together at Kasindi for a Christmas festivity. Christmas Eve passed very pleasantly. We Europeans met together at a common repast, and spent the remainder of the evening with a gramophone accompaniment beneath the lights of a Christmas tree fashioned by von Wiese out of the boughs of an acacia. A few glasses of grog assisted us to conjure up the festive spirit of Christmas, which it was difficult to realise amidst the green environment and the soft summer air.

And so, after a few days of zealous industry, the New Year drew near. We were able to look back full of gratitude on the year that had passed, and to anticipate the coming one full of hope. Each of my fellow-workers could gladly testify that, although labouring under many privations and the severest self-restraint, he had been successful in solving various new problems and in winning fresh fields of investigation for German science.

On New Year's Day Schubotz and I undertook an excursion, which was intended to extend over several days, to Njama Kasana for the purpose of fishing for plankton, dredging, and generally devoting our attention to the fauna of the lake. We only took a very small number of followers to erect the tents, one boy each and a cook, so that we were able to enjoy an undisturbed time without being subjected to the worries which are inseparable from travelling with a caravan.

From there we visited Katwe, a place of particular interest, which is situated on a salt inland lake, and is only divided from

Lake Albert Edward by a narrow, steeply rising neck of land. At first sight the place offers an extraordinary aspect. The wonderful wine-red colouring of the water spread out at our feet like a sea of blood, the blue canopy of the heavens, separated by the yellow sand dunes from the ruddy water, presented a curious contrast such as we were hardly likely to meet with again.

The volume of water in the lake is considerably less than it was at one time. This can be seen at once from the salt deposits, which cover the banks to the height of several metres. The depth of the water does not amount even to a metre. This retrogression appears to have a close association with the steady diminution of the water of Lake Albert Edward, the two lakes being connected by subterranean confluent. As the bed of the salt lake lies considerably higher than that of Lake Albert Edward, its entire evaporation within a measurable space of time is quite conceivable. In consequence of the retrogression and the steady evaporation of its surface water, thick deposits have accumulated on its bed, which in the course of time have consolidated into a thick encrustation of salt. The salt is simply gathered up by a number of men, who enter the water absolutely naked and wade about collecting it. It is then packed on sledge-shaped boats, which are drawn up on to the land by other workers. Here powerful arms seize upon it, sort it out, and heap it up in pyramids of a metre high. After being broken into very small pieces it is stored in small sheds thatched with straw till it is ready for exportation.

The following method is also adopted: On the two sides of a small ditch, flat basins, or troughs, of three to five metres square are fashioned by heaping up sand and clay. These are filled with about a foot of water taken from the ditch by means of a scoop or by hand. The power of the sun causes the water in the various divisions to evaporate so rapidly, that after the expiration of six days only a salt residue remains at the bottom. The salt thus obtained is finer and whiter than that which is broken away from the bed of the lake, and therefore commands a higher price. The quantities obtained are very considerable, and not



SALT PYRAMIDS AT KATWE



SALT PANS AT KATWE

only supply a great part of Central Africa, but also find their way to the west coast of Lake Victoria, to Entebbe, and to Bukoba.

From what I have just described it will be seen that Katwe is a place of great commercial importance, so that it was no cause for surprise that some difference of opinion should have arisen as to the position of the thirtieth degree of longitude, which passes directly through it, and forms the boundary line between the British territory and the Congo State. Before the discovery of this valuable spot the meridian ran by it on its eastern side, so that its incorporation in the Congo State was undoubted. Yet after its discovery the British Colonial Office came to the conclusion that a very grave error in surveying had been committed. A very clever astronomer then succeeded in shifting the longitudinal degree to the west of Katwe, so that the town fell into British territory. On this justifiable doubts arose in the minds of the Belgians concerning the accuracy of the latest survey. In order to arrive at a final settlement of the matter, Belgian and British Commissions were again sent out, and their labours were just concluding when we arrived on the scene. These two commissions had transferred the seat of their energies to the north of the Semliki, but we were privileged a little later on, shortly before they returned to their homes, to be entertained in both their camps in the most cordial and hospitable manner.

At present the monopoly of the salt industry lies in the hands of Sultan Kasakama of Toro, though after the question of its national incorporation has been settled once and for all, the administration of Katwe will probably pass into more expert hands.

We returned to Kasindi on the 5th of January, and there took counsel together as to the division of work for the coming months. Czekanowski was to travel round to the eastward of Ruwenzori, touching at Toro and Unyoro. Raven was to go to the south of these mountains, to undertake special work in the land of the Wasongora. We others intended to follow closely the course of the Semliki to Beni. We looked to the western slopes of the

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Ruwenzori range as well as to the eastern margin of the vast virgin forest, which reaches nearly as far as Beni, to open up new fields of exploration to us.

During the past few days large collections had been ticketed, recorded, and packed ready for despatch. About a hundred loads lay ready in Kasindi. The carriers who had brought up fresh stores and were returning home were employed to transport our treasures to Lake Victoria. As the imposing caravan disappeared down the valley we turned our faces to the north, towards new paths and fresh aims.



A CONGO SOLDIER FROM THE UELLE



NATIVES CARRYING PROVISIONS

CHAPTER VIII

THROUGH THE SEMLIKI VALLEY TO THE KILO GOLDFIELDS

ON the first day's march in the New Year, we were wandering through acacia forests and finding many fresh elephant tracks. We traversed steep, romantic, rocky regions up to Karimi on the Semliki, where we crossed. At this point we passed the equator for the sixth time on our travels, for, apart from our journey across the Indian Ocean, we were given the further opportunities of passing it on Lake Victoria, and again when near Kasindi.

On the day following we set up camp at the mission station of St. Gustave, where we were most hospitably received by Father Superior Farinelli. This mission, which had only been established about a year, had been levelled to the ground by a hurricane, and they had recently been celebrating its restoration. The houses and the chapel, constructed of *matete*, gave a very trim and pleasing impression. This was still further enhanced by the kindly demeanour of the mission brethren, who are specially esteemed by the Congolese on account of their avoidance of political affairs.

At our next camp, Sambia, after a hot, tedious march over somewhat flat country, we were agreeably surprised to meet Creydt, the Austrian cavalry captain, who, on hunting bent, had marched thither over Fort Portal. On the 13th of January we caught a glimpse in the distance of the spruce-looking houses of Beni, resting on the plateau of a hill of large circumference. Before reaching it, however, we had to pass in intense heat over many deep gullies which intersected a broad grass steppe. The latter presented a somewhat novel botanical aspect, as it was almost exclusively grown over with *borassus* palms. Many old

and fresh buffalo and elephant paths gave evidence of an abundance of game.

We were received at Beni by Derche, the chief commandant of the district, at the head of his forces, and accompanied by the officers of his staff, who had kindly protracted their visit of inspection until our arrival.

Next to the German station, Kissenji, on Lake Kiwu, Beni is doubtless the most attractive of the inland stations which we visited. The choice of its position alone gives evidence of forethought and taste. The gently sloping hill rising from the level plain of the Central African rift-valley, on which Beni is erected, is brushed on its western edge by the Great African forest, which extends to Ubangi, whilst the south-eastern slope falls away steeply to the Semliki, which winds and bends around the foot of the station, its average breadth being about 100 metres. Pretty, white-washed houses present a friendly aspect, an impression which is increased by a broad, open space on which waves the blue flag with the yellow star. The houses are connected by trim paths, bordered with banana trees.

The Belgian settlement in the Beni district is of quite recent date, and therefore capable of considerable development. Rebellion amongst the natives is chiefly answerable for the delayed opening up of this fertile district. The fear of punishment for past misdeeds drove the natives into the mountains every time the Belgians appeared, and frustrated all pacific and conciliatory approaches. It was not until the year 1907 that some of the tribes could be induced to return to their villages and homes, where they were treated with all kindness and assured of the groundlessness of their fears. Their example brought others back, and whilst we were there we saw banana plantations flourishing again, and agriculture generally in a thriving condition. At the back of the mountain ranges there are still many chieftains, however, who refuse allegiance to all Europeans, and are looked upon, with reason, as dangerous. Even though these rebels may not openly attack, yet by their attitude they greatly impede the proper cultivation of the land. Apart from their



BENI



FERRY AT BENI

Through the Semliki Valley 197

endeavours to incite a peaceful people to disobedience, they deprive the country of a considerable number of carriers and labourers.

A broad caravan road connects Beni with the Mawambi station, on the Aruwimi, and opens into the Irumu-Stanleyville highway (on the Congo). This direct communication with the greatest waterway of Central Africa lends considerable importance to the settlements. The commercial traffic is extremely limited here, as is the case all over the Congo State, on account of the difficult conditions prevailing. Naturally, many traders, mainly Indians, take advantage of the neighbouring forest, with its immense tracts and inadequate control, for smuggling purposes.

Beni is strongly garrisoned. During our visit the soldiers were most zealously drilled. At six o'clock in the morning the signal for parade resounded in the quiet air. Not only did the company itself respond to the call for daily duty, but also all the male and female hands on the station, about two hundred in number. Whilst the troops started their duties, the *Chef de poste* allotted to the labourers their daily tasks. Strict discipline was exercised at the muster. The presence of every individual was carefully checked when his name was called. Absence without excuse was punished, but this occurred very seldom. At eight o'clock the soldiers rested, whilst the Europeans assembled for breakfast. This meal was suited to African conditions, and consisted of coffee or tea, bread and butter, cold meat, fruit and cheese.

After breakfast was over, the military exercises, which I often attended, were continued till about 11 o'clock, when there was a noon-time interval. At 1 o'clock dinner was announced by two calls, and an hour later the signal for the afternoon muster was sounded, when the troops and the whole of the workers resumed duty. The afternoon's work finished at 4 o'clock. Very often there was a third muster in the evening, at which the people turned up in any rig they fancied, but generally with the characteristic Congo straw hat on their heads. Clothes, shoes, etc.,

were inspected, and wages and stores distributed. Before the signal for supper at 7 o'clock, the Europeans were in the habit of meeting in the house belonging to the *Chef de poste* to take a free and easy glass together. The evening often concluded with an excellent gramophone concert, which usually took place in glorious moonlight on the open square in front of the houses. The homely sound awakened many memories of the past, and caused our thoughts to wander away to those who were enjoying the conventional "pleasures" and festivities of the winter season in more or less stimulating society. How little I envied them! How much happier I was with the task I had imposed on myself! How rejoiced I felt at the thought of effecting something really definite, in filling in gaps of science, by opening up new fields, and by the investigations of my fellow-workers! I felt I was away from the vacuity of everyday life.

Towering aloft to the east of Beni are the prodigious masses of the Ruwenzori chain of mountains. A view of the mighty glacier which covers the summit is, however, rarely enjoyed. I had only one opportunity to gaze at it. It occurred at daybreak, and as the sun rose above the horizon the glacial ice caught up its rays and broke them into a gorgeous and scintillating display of colour. As though Nature were ashamed, however, of this puckish play of its favourite, she softly drew down a covering veil again, making it even denser, until the contour of the mountains was mysteriously obscured from the gaze of the beholder. We owed it to the increasing downpours of rain that we occasionally caught glimpses of the mountain. Torrential showers had been the order of the day for the past week.

As we sat at breakfast on the 17th of January, a hailstorm suddenly swept down with devastating force, upsetting the tents, bending the young trees almost to the ground, shaving the tops of the *papaia*,* hurling boughs and branches to the earth

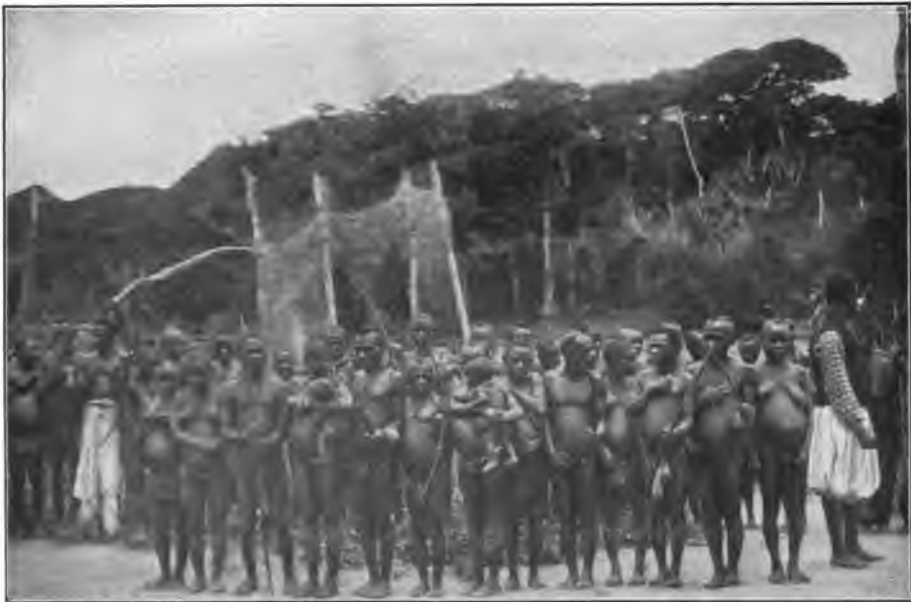
* The *papaia*, or Melon tree, bears greenish, round-shaped fruit, about as large as a coco-nut, the palatable yellow inside of which is scooped out with a spoon and counts as a particular delicacy.



IN THE BENI FOREST



FOREST DWARFS' CAMP



WAM BUTTI PYGMIES

and breaking a large number of banana trees. These phenomenal displays of the African elements usually endure but for a short time, and in this instance within a quarter of an hour the sun was laughing at the ravages of the storm.

Next day the entire expedition, accompanied by Vêriter, started off on a fourteen days' excursion towards the eastern margin of the great forest. After a short march on the first day, we pitched a camp deep in the forest, close to the dwelling of the chief, Muera, who was, however, away. Breathless with expectation, we penetrated the mysterious, shadowy depths of this endless labyrinth of virgin forest. Our imagination was strongly stirred by the accounts of notable men, such as Stanley, Wissmann, and others, who had thrillingly described the delights—and terrors—of their journeyings through the leafy jungle. Since their time, however, the journey through the forest has doubtless been lessened of its terrors, but for the first few days of our stay there the full charm of its fascination was exercised upon us. All poetic fancies, however, were soon dispelled by the constantly increasing appeals to our scientific interest.

The farther we penetrated its depths the greater grew the rapture of our botanist, for he discovered flora which differed essentially from any that we had hitherto encountered in the forests. We also constantly came across zoological novelties, more particularly smaller kinds of birds and lower forms of animal life. Nevertheless, Schubotz, strange to say, found species, particularly among the birds and the lepidoptera, which, in spite of their pronounced western character, he had already observed in the eastern forests and on the island of Kwidschwi, on Lake Kiwu. Great keenness in collecting was soon shown, which was evinced by the valuable spoils brought in from all directions.

On the third day of our halt, Muera himself appeared. It was a matter of importance to us to get into contact with the Wambutti—the true pygmies—whose distributional area starts in this region. As the tribe which dwelt in the vicinity was under Muera's authority, we were dependent upon him for help.

He declared himself prepared to put us into touch with them, and, as a matter of fact, five of the tribe made their appearance on the following morning. As it was our first meeting with this exceedingly singular race, and their first meeting with white men, we regarded each other with undivided interest.

I have already described the general characteristics of the pygmies, their dimensions, appearance, etc., when discussing the Batwa of the Bugoie forest, but will now supplement the information. One of their most striking features is their extremely fair skin, and, apart from their diminutiveness, makes them stand out conspicuously from the Bugoie Batwa. The pygmies are compact and strong in build; are very muscular; have round heads and short, curly hair. Big, intelligent eyes gaze out from good-humoured faces, in which the broad nose-base is typical. Their clothing consists of an apron of grey, woolly beaten bark, which is obtained from the supa tree, and fastened round the loins with a belt of grass cord. Sometimes we saw belts made from the hide of the okapi (a giraffe-like ruminant).

The weapons of the Wambutti consist of a bow and arrow and a short spear. According to their uses, whether for war or for hunting purposes, they are made of iron and wood respectively. The men forge or carve them themselves, and the arrows are all tipped with vegetable poison. From researches made by Dr. Max Krause, of the Berlin Hydro-Therapeutic Institute, it appears that the poison in these arrows is derived from a species of *strophanthus*, most probably *hispidus* or *kombe*, not *gratus*. After removing the poisonous coating for the purpose of investigation, it was found that the arrow was notched about three centimetres from the point, so as to favour its breaking off in the wound. The poison works rapidly, and is fatal in its effect unless the arrow point is withdrawn very quickly and the wound sucked dry. Big game always succumb to its effects; death follows more or less swiftly, according to the particular position of the wound.

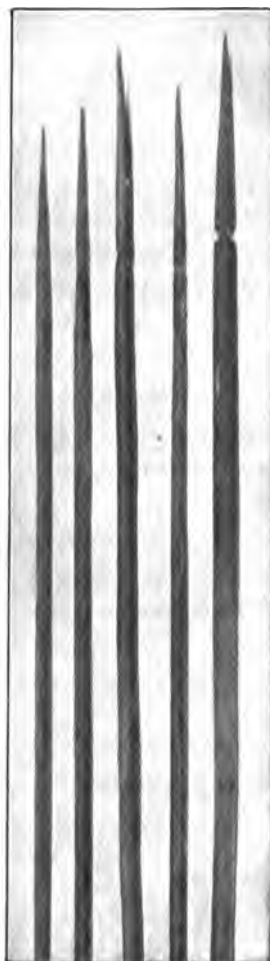
The women are most forbidding in their ugliness, and re-



**HEAD OF
PYGMY
ARROW**



**A PYGMY OF THE
CONGO**



**PYGMY SPEARS
(WITH POISONED POINTS)**



**A PYGMY WOMAN OF THE CONGO
FOREST**



WAM BUTTI WOMEN AT SALAMBONGO

semble the men as regards stature and complexion. Occasionally they wear thin copper rings drawn through their lips, and cowrie-shell pendants as ornaments. Their apparel is yet more primitive than that of their lords and masters, their apron often dwindling down to a barely perceptible triangle.

The children, who are quite naked, are carried on their mothers' hips, supported at times by a very thin cord running down from their mothers' shoulders, which occasionally cuts deeply into the infants' bodies and causes many a poor little creature to wail miserably.

The Wambutti have no fixed abode. Their place of residence changes according to their whim or hunting conditions, but is never to be found outside the forest boundary. The huts are carefully built of liane, covered over with foliage, which is scarcely proof against beating rain.

Those who do not live by pillage, theft and hunting—favourite pursuits of the entire race—spend their existence in and about these huts, occupying themselves, as mentioned, with smith-craft, carving, etc.

At Muera's village the two biologists parted from us, as they were anxious to continue their task of collecting along the road, the small birds, butterflies, etc., being more frequently met with there than in the forest itself. Later on in our march through the mysterious forest, which lasted some weeks, we noticed that the feathered tribe was more in evidence on the borders of the roads and the clearings than in the villages. The observations and collections of the botanist, too, were facilitated by the clear survey which the open country afforded.

Wiese, Vériter and I, with the dwarfs, pitched a camp right in the interior of the forest, far from all human traffic, and for eight days roamed through the jungles. Without the dwarfs' escort this would not have been practicable, as the only possible means of communication lay in the numerous elephant tracks, which would quickly have bewildered any white man.

As we ascertained by inquiry, we were already within the zone of the okapi. The reader is, doubtless, no longer un-

acquainted with the name of this singular mammal. It is only a few years back that a Scandinavian, Lieutenant Erikson, in the Belgian service, discovered the existence of an antelope-like animal, which was named "Okapi" by the forest dwellers. He was also fortunate enough to secure a skin. Through the mediation of Sir Harry Johnston, Governor of Uganda, the skin reached London, where it excited great comment amongst the savants on account of its unique quality and markings. Soon after it was acquired at a very high price for the Tring museum.

Kuhnert's picture is more instructive than pages of description. The striking markings on the legs, the length of the neck, the high withers, and the colour of the head may be regarded as the main characteristics of the creature. The height of the withers corresponds to that of a large ox.

The most remarkable part of it is how a mammal so conspicuous in character could have remained concealed until comparatively recently in a territory which has been under European administration for over twenty years, and in which over 1,000 white men live. This circumstance may well lead to the conclusion that the exploration of this vast forest region, which comprises an area several times the size of Germany, is by no means exhausted.

The bagging of an okapi by a European can only occur by accident. A systematic pursuit of this excessively shy creature would be almost useless. The density of the forest, the tread of heavy boots, the rustling of the clothes against bushes, would invariably frustrate the attempts of any European hunter. The difficulties may best be illustrated by the fact that in 1905 Major Powell Cotton, at Makala, farther westward in the forest, devoted six months to the chase of the okapi, and only obtained one animal—and that through the pygmies. At least he had the satisfaction of viewing the much coveted game immediately after it was killed—a privilege accorded to few.

Our own hopes of getting a shot at an okapi sank very rapidly when we got a closer glimpse into the positively unfathomable tangle of the forest. We soon discovered that the



THE OKAPI

From a Painting by W. Kuhnert

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sight of an animal slain by pygmies would have to satisfy our ambitions, and therefore left no stone unturned at least to attain this object. Dazzling promises of baksheesh spurred on the Wambutti to great zeal. All day long they roamed alone through the forest. Tracks were found, but nothing else.

The Wambutti hunt the okapi chiefly in the rainy season. In the morning they search for a fresh trail left in the night. This they follow up through thick and thin, through all kinds of foliage and liane creepers. As the okapi ramble far and wide, the chase spins out for days. The incredibly keen scent and sagacity of these pygmies alone make it possible to keep on the trail of this strange species of game; they can follow almost imperceptible indications which entirely escape the eyes of Europeans. As the okapi nervously avoids the sun's rays, the hunters have to seek it in the densest brushwood. They are nearly always successful in creeping noiselessly up to it within a few paces, when they slay the animal by hurling poisoned spears.

The name by which this large antelope is known varies according to the district. "Okapi" and "kwapi" are mostly used, and we also heard "alabi" once. It was, too, very often called "kenge." At Mawambi, on the Aruwimi, I showed a coloured representation of the *okapi Johnstonii* to the Wambutti. They knew it at once, and unanimously said "kenge." The expressions "okapi" and "kwapi," as well as "alabi," were entirely unknown there. The pygmies at Beni, on the contrary, only used the designation "okapi" and "kwapi," and generally knew no other.

At Sindano we were successful in acquiring a skin, in good preservation, with the skeleton complete; also another at Songola, and three more at Irumu. These were the first brought home by any German expedition. I am not aware either of there being any other skull existent in Germany.

Even to-day we know but little of the habits of the okapi. All that has been made known so far is limited to tracking methods. From this we know that the creature finds its way

by night to the watercourses, but remains concealed in shy seclusion during daylight. According to the experiences of Europeans familiar with the Congo, many tracks have been found quite close together, as though produced by the passing of a herd. Although we have not had an opportunity of proving the truth of this statement, it certainly seems that the okapi is not so rare as has been generally accepted, for, as already mentioned, one often comes across girdles made from its hide. Again, the animal is familiar to all the forest dwellers.

The title "kenge" was often also applied to another variety of antelope, which equals the okapi in size. This is the great striped antelope (*Booceros spec.*), which exists throughout the Congo forest. On the eastern edge of the forest it is called "soli," and "bongo" in the Middle and Lower Congo. The buttocks are far less striking than those of the okapi. A further mark of difference is that it bears horns about 50 centimetres in length, which undoubtedly betrays its kinship with the bush-buck. The horns have the same peculiar twist, and are quite of the bush-buck type. The skin is light and covered on the back with a number of uniform white stripes, similar to those of the elephant antelope. Fortune favoured us in this connection, for we managed to obtain a skin and a skeleton from the forest dwellers.

Another pleasant surprise for us was the acquisition of a brown hide, showing a yellow stripe along the back which grows broader from withers to tail; it comes from an animal named "lotzi" by the Wambuba, and "dotzi" by the Wambutti. We were further able to enrich our collections with the hide of a brownish-silver-grey sort of antelope called "sindo" in Kingwana, "haissuku" in Kinande, and a light brown coloured one, the "munso." The two latter belong to the dwarf type. Both were dedicated to a German museum as the first examples of their kind.

A three days' halt in a former pygmy camp resulted in a few specimens of monkeys—after some real hard stalking—and Wiese contributed an elephant which, to judge by its general



OKAPI SKINS
IN THE CENTRE (LEFT) TWO BELTS OF OKAPI HIDE



AN OKAPI SKULL

appearance as well as its tusks, we took to be a dwarfed representative of its class. Dr. Schubotz and I unfortunately only found the spinal column next morning, together with the carefully severed head, as the entire remainder had already found its way into the stomachs of the cunning Wambutti and carriers. The length from the spine to the pelvis was only 112 centimetres, that of the head from the start of the ivory to the occiput 66 centimetres, with a height of 43 centimetres. The measurements of the longest tusk, inclusive of the portion contained in the skull, were 78 centimetres by 23 centimetres thickness at the egress from the skull.

All forest folk differentiate between "small" and "big" elephants, a description on which one can certainly base no conclusions as to age or race. The accuracy of the designation is, however, clearly confirmed by many small tracks found with the large ones. Our lack of time for the further elucidation of this interesting question was all the more regrettable.

Hopefully as our excursion into the great forest had commenced, and successfully as it had proceeded, it was to end sadly for us. Even at Muera, Weiss had complained of pains in his side. As his condition threatened to become worse, and as he was incapable of walking, he had to be carried back to Beni. He there claimed the help of Dr. Mortula, who quickly diagnosed an abscess on the liver. Weiss, therefore, instead of proceeding with his very successful topographical work, found himself compelled to lie in bed and undergo a severe course of treatment. A few days later I received a letter from Captain Creydt, who had attached himself to Raven's party, telling me that Raven was lying at Kasindi, after having been badly injured by a buffalo. Raven had followed a wounded buffalo into the dense *matete* within five paces, and had suffered such a sudden and surprising attack on the beast's part that it was impossible to avoid it. The enraged animal had got him on his horns and hurled him into the air; then he had rushed at the unconscious man and broken several of his ribs, caused him various flesh wounds, and three times pierced the muscles of his right arm.

His trusty Askari saved him from his critical position by firing a volley into the creature whilst it hung almost over his body. Under the skill and careful nursing of Dr. Mortula the two invalids gradually recovered, but it was quite impossible for them to participate further in the expedition. Accompanied by the doctor, they started on their return to Europe, taking short marches to Entebbe. In spite of his awkward position, lying in a hammock, Weiss contrived to carry out the survey of the road as far as Entebbe.

We now returned by a circuitous route to Beni, where nearly all the Europeans were lying sick. Fever and other disorders had broken out. The non-appearance of the expected rain had a depressing effect, and made the temperature rise to 30 deg. C. in the shade. This heat enervated the patients still further.

Rain was badly required, for its shortage in the previous year had brought about a failure of the harvest and resulted in a famine. The banana fields yielded no results and the potatoes dried up. At the finish the people had to suck bananas in order to alleviate the cravings of extreme thirst. A similar condition of affairs now menaced.

We only stayed a few days at Beni, and then set out for the western slope of the mighty mountain chain of Ruwenzori. On the way we passed broad banana fields, where bird life was so plentiful that we hurriedly pitched camp, so as to seize such a favourable opportunity for collecting. Great hornbills bestirred themselves close to tiny summer birds, weaver birds, "kasukus," and grey parrots, whilst innumerable gaily-feathered singers flitted through the air. Our zeal for collecting was, however, soon arrested by a pelting downpour of rain, which converted the ground almost immediately into torrential brooks or morasses. Although the natives greeted this with joy, we ourselves found it very disagreeable, as the loamy soil promised us an exceedingly arduous march on the slopes of Ruwenzori. Our fear that this downpour was the forerunner of the February rainy season proved correct, and the conditions of our march were essentially unpleasant. In addition to the slippery path,



OKAPI SKINS

which was in evidence as soon as the ascent commenced, there was the *matete* 4 metres in height, which bent its stalks in such a fashion across the narrow way that it was only possible to advance as if crawling through a tunnel. Thus the chopping knives had in the first instance to hack a way for the loads which followed, a work which retarded us so long that we only traversed 10 kilometres in five hours. We went at it random fashion, hoping that the road taken would lead us to some favourable camping site. We had not been fortunate enough to secure a guide. All the plantations were deserted, the villages empty.

Finally we accidentally surprised a man in a clearing, who, his face distorted with fear, was in the act of vanishing into the tall grass. Asked the reason of his fear and that of his fellows, he affirmed that our shots of the previous day had induced the belief in the people that the "whites" had come to do battle. The timidity of the population arose from the fact that this district had very rarely been visited by Europeans, as most of the expeditions to the mountains had started out from the east, with Fort Portal as their base. Thus the natives had had no opportunity of convincing themselves of the peaceable intentions of their European visitors. Stories circulated by the insubordinate and so far unsubjugated chiefs of the mountains had no doubt helped to increase their fears. Won over by a few presents, the man at last consented to act as our guide, and accompanied us some distance through the Butagu valley. We halted at an altitude of 1,500 metres. Splendid wine-palms, bearing enormous blossoms, with fronds 10 metres in length, waved in the air and shaded our tents.

The ascent, which had been planned for the next morning, had to be postponed, as the whole neighbourhood was shrouded in mist, and streaming rain blotted out the landscape. I thus expressed our mood in my diary:

"A rainy, hopeless-looking day, forbidding an ascent! Everyone in his tent, reading, writing, or trying somehow to while away the time. Torrents of rain pouring down the moun-

tain, furrowing deep channels in the ground, and turning the soil into ankle-deep mud which, of course, is carried by us in cakes into our tents. Nothing dries; clothes and boots will need several days to get right again, and will even then have to be drawn on damp. The men are freezing. Our baggage is being damaged, the photographic apparatus especially. Our guns have to be submitted to a permanent oil bath, so as not to rust entirely, and to be ready for use. The zoological and botanical collections are in a bad way. As they cannot dry, they are easily exposed to the danger of rotting. With a heavy heart we have thrown away many a bird skin, many a plant specimen which have become worthless. The temperature is cool—15 deg. C. both yesterday and to-day. These are the afflictions of the rainy season, which, for the second time already, we are tasting."

At Muera's village the two biologists parted from us, as they I will here set down some general remarks concerning the geology of Ruwenzori, which are culled almost verbatim from the Duke d'Abruzzi's book. Our geologist, Kirschstein, was not privileged to visit this mountain range. Ruwenzori stands, so to speak, like a mighty projecting corner tower in the wall of the eastern border of the Central African rift-valley. It is certain that Ruwenzori is not a volcano, as was assumed by Stanley. It is a serrated range, consisting of gneiss as well as micaceous slate. Beginning at an altitude of some 4,000 metres, its highest summits are mostly formed of aphanite. In this respect it differs from all other mountains in Equatorial Africa, which tower up to Alpine heights. With the exception of the Aberdare Chain, which rises to a height of 4,270 metres, they are all volcanoes—Kilimandscharo 6,010, Meru 4,730, Kenia 5,600, Elgon 4,230, the Kiwu volcanoes 4,500 metres, and the Cameroon mountains 4,070 metres. As far as snowfields and glaciers are concerned, there is nothing in the whole of Africa which can compare with Ruwenzori. Six summits of the whole group, which have been named by the Duke d'Abruzzi after celebrated Central African explorers, are covered with perpetual snow. From north to south

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they run as follows: Gessi 4,769, Emin 4,815, Speke 4,901, Stanley 5,125, Baker 4,875, Ludwig of Savoy 4,663 metres. The Ruwenzori glaciers are included among the so-called equatorial type; that is to say, they form a kind of ice-cap, at times of great dimensions, and more or less entirely cover the summits of the mountains. From the caps, branches stretch out down below, which enter the valleys and only rarely extend beyond the lower boundary of the perpetual snow, which lies between 4,450 and 4,500 metres. In consequence of the position of the glaciers, the moraines at the sides are quite inconsiderable, and even the ground moraines do not appear to possess any noteworthy development, at least, judging by the terminal moraines, which never exhibited any important feature.

Another circumstance worthy of notice is that the water which spurts out from the fore part of the glacier never has that dull appearance which the melted snow of the Alpine glaciers exhibits under similar conditions. The water is perfectly clear, which proves that the progress of the glaciers, at the present time, at least, is quite inconsiderable. The erosion also must be very slight, which will account for the absence of ground moraines.

The tremendous development which the glaciers of the Ruwenzori group underwent during the glacial period is a geological phenomenon of great importance. We learned from the investigations of Dr. Roccati, the geologist to the Duke d'Abruzzi's expedition, that they have extended down to 1,500 metres on the eastern side in the Mobuku valley, whilst now they are no lower than 4,200 metres!

I would particularly desire to emphasise these statements. If we really may accept such a glacial period for Equatorial Africa, which observations on the Kenia would tend to prove, many questions of a botanical and animal geographical nature would easily be solved. The almost bewildering conformity which is exhibited in the vegetation of mountains which are now divided by broad steppes or forest regions of purely tropical character, and in such types that their dissemination through birds or the air is not to be thought of, would then be explained.

As we wished to commence the march to the Congo on the 1st of April from Irumu, and had meanwhile to get through an extensive programme, time began to press. Lieutenant von Wiese and I, therefore, had to leave the further ascent of the mountain, as well as the biological investigations, to the botanist and the zoologist alone, or the unfavourable climatic conditions prevailing might have still further delayed us. After touching at Lake Albert, I was specially keen on visiting Kilo, the auriferous, so we bade good-bye to our fellow-travellers and settled to meet again at Irumu at the end of March.

Mildbraed reports as follows on the advance through the valley of the Butagu :

"On the morning of the 11th of February, Schubotz and I separated from the Duke and Lieutenant von Wiese, accompanied by their best wishes, which savoured somewhat of sarcasm, considering the atrocious weather of the past few days. Things looked far from encouraging when we set out ; it was a dismal, gloomy day, but, at least, it was not raining. We entered the valley of the Butagu, possibly the largest stream on the western side of the mountain, and which bears the glacial waters of the highest snow mountains in the group,* to the Semliki. We pursued almost the identical route that Stuhlmann took in June, 1891. It leads along the Butagu valley at a considerable elevation above the brook, which can only now and then be descried, up and down over the small streams which pour from the sides of the mountains situated to the north of the main valley.

"Elephant grass (*Pennisetum cf. Benthami*), with stalks the thickness of a man's thumb, and four to five metres high, bordered the first stages of the narrow path. It is extremely unpleasant to march through *matete* of this description, for the massive stalks frequently choke the way and have to be hewn

* The Duke d'Abruzzi assumes that the waters of the glaciers to the "west of the Ludwig of Savoy, the Baker, the Stanley, the main portion of the Speke glaciers and of the Emin" collect in the Butagu ; the two last mountains, however, do not come into consideration. The stream denoted in the plan of the Ruwenzori chain by a dotted line does not flow into the Butagu.



SCENE AT THE BASE OF THE RUWENZORI MOUNTAINS

Through the Semliki Valley 211

away with choppers. Broad leaves with sharp edges cut into hands and face, and incessant endeavours to protect one's eyes finally produce a feeling of intense nervousness. In addition to this, there was the heavy, moist air under the tall, soaking trees. At times this grassy wilderness was broken by immense fronds of isolated wine-palms, resting on short stems, or by banana fields and small cultivated plots. Later on the elephant-grass was relieved by plots of brake-fern, as tall as a man, which certainly reminded one of home, but were not pleasant to negotiate. Strips of woodland, however, which interspersed the scenery here and there, and in which splendid tree-ferns spread their mighty yet graceful fronds across the murmuring waters afforded a welcome change. The steep, slippery path through these deeply-indented side valleys was torture at times for the carriers, and we were often very much concerned for our still more sensitive collections.

"At last, at a bend of the way, we espied a small settlement in the distance, Kakalonge, set on the ridge of a hill which slopes gently from the higher mountains down to the Butagu, which, with its few round huts and cultivated plots, wore a friendly and inviting aspect.

"Here, after a really exhausting day for the carriers, we pitched our camp at an altitude of about 2,200 metres. The landscape already exhibited the sublimity of Alpine regions, although, thus far, the loftiest splendours were still concealed from our view. Right before us, across the rushing Butagu in the depths below, we gazed on the Wawunga mountains rising aloft like a gigantic wall, which accompany the main valley to the south. Lower down, the steep slopes were still dotted with single huts and small cultivated spots, as well as numerous wild banana trees, whose light green colour formed a bright spot; farther up woods covered the mountain sides.

"The vegetation in the vicinity of our camp was in the main of a secondary character, a mixture of brake-fern and all kinds of shrubs, bushes and plants, amongst which the beautiful big vernonia, with large white or pale lilac corymbus, and the

tall *Lobelia giberroa* Hemsl., were particularly noticeable. The *Cynoglossum* family, with their cerulean flowers, which were vividly reminiscent of forget-me-nots (they are so called in Stuhlmann's report), were very prevalent, and also yellow everlasting, with large and small heads, plants which are met with everywhere in the lower mountain region. A little farther up there was bamboo, amongst which the fine big sapotaceous tree of the Bugoie forest, the 'mutoie' (*Sideroxylon Adolphi Friederici Engl.*), was to be met with.

"On the evening of this day we discussed the question of how we should continue the advance. The Congolese had first promised us as guide a white non-commissioned officer, who had once escorted a Belgian officer as far as the snow; then it was to have been a black sergeant, who had made the same excursion, but they had left us beautifully in the lurch. As a whole, the route had been sketched out for us, but as to the details regarding favourable division of marches, possibilities of encampment and of finding water, etc., we knew nothing. In any case, we wished to establish a fixed camp, and as we had descried, at no great distance, a thick, finely-grown forest, we decided to march thither the next morning and pitch a camp to serve as a centre to our collecting expeditions. The path first led into a deep, cleft-like valley, through which a spring of crystal-clear, ice-cold water flowed. Then for a time we had to climb up again steeply, and came upon a clearing, luxuriant with plants and bushes, passably level, which appeared to be extremely suitable for our purpose.

"We found ourselves now on the lower part of a long ridge-like stretch of mountain, which led up to great heights by a fairly regular gradient, and which Stuhlmann had also climbed. As it was still early in the day, Schubotz and I, in order to take our bearings, went up on the crest to which a very narrow but tolerably good path led us. Through mixed growths of thickly-foliaged timber and bamboo, at an altitude of about 3,000 metres, we reached the 'sub-alpine' region of the *ericacea*, which, similarly to the 'alpine' formation of the tree-like



**BLOOM OF THE RAPHIA (WINE PALM)
(DR. MILDBRAD)**



MOUNT STANLEY OF THE RUWENZORI RANGE, FROM THE WEST

senecio and stalk lobelia, nowhere in the African alps attains so prodigious a development as on Ruwenzori.

"On our way the vegetation was formed chiefly of *Erica arborea*. The younger specimens are almost like juniper shrubs; the older are tree-like, four metres or more high, with knotted stems and very bent and twisted boughs, which bear at their ends, in small, compact masses, the tiny-leafed, deep blue blooms. The stems and boughs are thickly covered with cushions of mosses and liverwort, and big, flabby, jelly-like patches of tree-moss, also the long, grey beard-moss of the *Usnea* family. The whole effect, especially when mists are gathering, gives a very weird and unsubstantial impression, as of a home of spectral hobgoblins and mountain gnomes. The ground is covered with thick carpets of swamp-moss, numerous *hepatica*, and an exquisite feathered moss, the *Breutelia Stuhlmanni*. The masses of sphagnum are so wet that they look like fully-saturated sponges. Among the *ericaceæ* are the shrubs or small trees of *Rapanea pellucidostriata* Gilg., *Olinia macrophylla* Gilg., and the striking but somewhat rare *Vaccinium Stanleyi* Schwf., an African bilberry, whose fruit is very similar to the European variety. I had already come across it on Sabinjo amongst the volcanoes. In addition to the splendid bushes of big, beautiful everlasting *Helichrysum formosissimum*, two orchids are especially noteworthy, *Satyrium crassicaule*, with pale pink, and *Disa Stairsii*, with dark rose red or purple blooms, fine plants which are met with on the volcanoes, and are reminiscent of many species of orchids of our meadows.

"Climbing on in the *ericaceæ* region, we came upon an old camping place, which we thought of naming our 'lower Belgian camp.' We did not learn much by our advance, for we were unable that day to see the higher mountains; we only discovered that we should have to progress along the same ridge over several summits, and learnt from natives that higher up there was supposed to be another 'Belgian camp.'

"Should we shift our camp higher up? It would have been simply impossible to wind our way through the dense *ericaceæ*

scrub with the big caravan and bulky, heavy tent loads. We should also have been compelled to carry water with us, as none was to be had on the ridge, and, in addition, a halt of any duration at an elevation of 3,000 metres would have been nearly torture to the carriers, who are peculiarly sensitive to the damp cold and mist. We remained, therefore, where we were, and utilised one day to explore the near vicinity of the camp; on the next we proposed to push forward again and see how far we could get with two natives and a few of our followers who always accompanied us on smaller excursions. We climbed up to a crest above the 'lower Belgian camp.' Then Schubotz turned back, as the weather had grown very murky. I now climbed on up a hill lying before us, which formed the most disagreeable part of the journey. It was manifestly the same spot at which Stuhlmann on his memorable climb had left his tents and all heavier loads under the charge of the famous Uledi. Here the *ericaceæ* formed a veritable forest. The trees attained an average height of 6 to 7 metres, and frequently 30 centimetres in diameter. The slope of the hill itself was pretty steep, but the worst was that everywhere fallen *ericaceæ* were lying around. The whole place was overrun with luxuriant flora (balsamines and mimulopsis), and mosses dripping with moisture, so that it was impossible to see where I was going, and I often sank up to my waist in some concealed hole or other. Even when this hill was surmounted, things did not go much better. The big trees and the steepness of the way ceased, but in their stead the vegetation consisted of *ericaceæ* shrubs of juniper-like growth (*Philippia longifolia* Engl., *n. sp.*), which were very dense, so that we had all we could do to push through it. The weather was so thick that we could only see a few metres ahead; the path, however, could still be discerned. Here, too, we found the so-called 'upper Belgian camp.' Then we came to a small mountain stream in a light depression which divides the long mountain ridge on which we had climbed from Mount Ulimbi. The *ericaceæ* shrub ended and the fine alpine flora of Ruwenzori commenced with the two tree-like senecio, *S. Johnstonii* and

S. adnivalis, the stalked lobelia of the lofty regions, *Lobelia Wollastonii*, and the splendid bushes of *Helichrysum Stuhlmanii*, with silver white or slightly yellow everlasting heads, whilst the ground was covered with a carpet of *alchemilla*, dwarf shrubs and mosses. Beautiful *Nectarina Johnstonii*, a colibri genus, the males of which are magnificently coloured, were flying round the lobelia stems in pairs. Their body colour is almost black, whilst their pinions and head are an iridescent emerald green. Their most conspicuous adornments, however, are two lengthened middle tail feathers, which flutter streamer-like in flight. It is charming to observe the doings of these devoted couples in these inhospitable heights; how they fly in bow-like circuits from one plant to another, or flit about here and there on the big branches, digging their delicately bent beaks into flowers to obtain insects, whereby they effect pollenisation at the same time.

"That day everything appeared grey and obscured through a misty veil of fog and rain; the weather had been growing steadily worse, and such severe, damp cold prevailed that my hands had become quite numbed. Except for a leathern jacket, which only kept the upper portion of my body dry, I could not have advanced so far. As the fog prevented any view, and it was already two o'clock, I turned back, although the guide urged me on, addressing me vociferously; but I only understood the words 'chupa' (bottle) and 'matabisch' (for baksheesh). I learned later that he feared he would lose his baksheesh if he did not show me the bottle on Ulimbi which served as 'visitor's book.'

"Next day brought glorious weather with warm sunshine, so that in our encampment, about 2,400 metres above the sea-level, we were able to work at our collections in our shirt sleeves. Our drooping spirits revived, and I decided to make another attempt at an ascent on the following Sunday, the 16th of February. As my constant follower, Maneno, and another, had not proved good mountaineers on the 14th, and had been left wailing and freezing on the way under an erica bush, I gave up any hope of relying on my own people, and selected three quite wild natives, with whom it was only possible to carry on very imperfect com-

munication by signs and grunts, and when it came to the worst I used the magic word 'matabisch.' I equipped them with small rifles (for the *nectariniidæ*), breakfast, and a case for the plants, and marched out at six o'clock. I really had intended to start earlier, but my three savages had not turned up. At five o'clock I watched the moon sinking over the Semliki plain, and, smoking a morning cigar, I gazed on the awakening of a new day, which broke in wonderful clearness. The sun was still below the horizon and it would take another good hour before it would be able to peep over Ruwenzori into our camps; but the Wawunga mountains were already looming up like blue silhouettes against the clear sky, and opposite to them the bolder outline of the ridge which bounds the Butagu valley in the north.

"We started out in the clear light of the dawn. On reaching the 'lower Belgian camp' we could see, away over the ridges, the white, snow-capped heads which had appeared so gigantic in the fog previously, and from the upper camp I soon saw that all difficulties were overcome and that I had been quite close to the goal on the cold, misty day when I first attempted the climb. Ulimbi rose gently up covered with mosses and grey *alchemilla*, and at intervals grew *senecio* trees, stalk *lobelias*, *helichrysum* bushes, and shrubs of *Hypericum keniense*, radiant in the warm sunshine, although frost still lay in shady places. Up we went, leisurely ascending almost imperceptibly to the edge of the plateau; and then a spectacle of such grandeur confronted us that words fail to picture it. The cliff fell down precipitously to the dark surface of a dammed lake, and opposite rose wild, black and jagged walls of rock, between which the glaciers glimmered blue, torrents rushed down from the dazzling snow lines of three kingly heads, where silence reigned supreme.

"We proceeded along the edge of Ulimbi to the 'chupa,' the bottle which serves as visitors' book, an object which will doubtless not long be wanting on any African alp (on Ninagongo there must have been a good dozen). Unfortunately I had to break it, as it was impossible to pull the paper out; Schubotz

replaced it the next day with another. It proved, as we already were aware, that in 1906 a Belgian officer named Bogaerts and a non-commissioned officer, Joissan, had been there, and, what we did not know, that on the 14th of December, 1907, Mr. J. S. Coates, of the Anglo-Belgian Boundary Commission, had 'drunk to the health of his predecessors.' Now I understood why the so-called 'Belgian camp' had looked so fresh. In passing, just a hint for those desiring to record their visit in bottle form at other spots: Take a slip of paper, not too large, and roll it so that the writing is on the outside, and place it in the neck of the bottle with the writing against the glass, so that it can be easily read by all who may come after.

"It was time to return, but I had good reason to feel satisfied, for, favoured by a radiantly sunny day—a great rarity on Ruwenzori—I had seen everything that I could under such conditions. I had enjoyed a clear view of the mightiest peak of the group, Mount Stanley, and had at least obtained some conception of the snows and wildness of its glaciers. The huge sentinels crowning the highest ridges particularly attracted my attention, with their colossal icicles hanging down from jagged rocks and ice blocks, or leaning against them like columns. They are, doubtless, the result of powerful sun effects alternating with long, cold nights. Unfortunately I was not privileged to get as far as the glaciers, as the deep cleft in which the lake lay was unsurpassable from this direction. If I had decided to make a circuit, it would have necessitated my encamping on Ulimbi, and our equipment was not adequate for that. First and foremost we possessed no so-called 'patrol-tents' and sleeping bags, not to mention any Alpine tourist kit, ice-axes, ropes, etc.

"It appears to me that the route through the Butagu valley is very well adapted for attaining the highest summit of Mount Stanley. In the first place, it is not necessary to traverse any of the swampy valleys of which the Duke d'Abruzzi complains so much. Up to our fixed camp, direct north-east of the junction of the three great streams, there is still cultivated country, and

thence with small loads and more carriers one can get on to the long ridge by a very gradual ascent, apart from the one awkward place mentioned, and on up to Ulimbi, although it certainly would mean a very strenuous day. Then one should not, as Stuhlmann proposes, descend to the lake, but make a detour of the deep breach to the north, arriving in due course at the snows of Mount Stanley. The great advantage of this route would lie particularly in the fact that, before the actual Alpine ascent, there would be no climbing and clambering of much account, and that in clear weather the way could be seen far ahead and the whole surroundings overlooked. *Vivat sequens!*

"Shortly after two o'clock I started on the return journey, and was back in camp soon after sunset. My inspired description resulted in Schubotz ascending Ulimbi on the next day. He was successful, too, in obtaining a few photographs. In the meanwhile I busied myself with the collections and completed them in the forest in the vicinity of the camp.

"This forest is not equal in beauty to the Rugege, and it lacks such immense tree giants as the podocarpus and 'mutoie,' found in the Bugoie district. Bamboo stocks of *Arundinaria alpina* are interspersed with foliates. The principal trees are: *Dombeya leucoderma* K. Schum., *Sideroxylon Adolphi Friederici* Engl., *Olea chrysophylla* Lam., and *Olea Hochstetteri* Bak., *Mystroxyllum aethiopicum* (Thunbg.) Loes., *Pygeum africanum* Hook. f., *Allophylus abyssinicus* (Hochst.) Radlk., *Alanginum begoniifolium* (Roxb.), Harms., *Pittosporum fragrantissimum* Engl., *Rhamnus prinoides* L'Herit., *Maesa Mildbraedii* Gilg., *Persama spec.* The *Macaranga kilimandscharica* and *Polyscias polybotrya*, so frequent in the Rugege and Bugoie forests, I only found in the rather denser forest ranges.

"On the day following Schubotz's ascent we marched back through the Butagu valley, and on to Beni. Schubotz had originally intended to proceed along the foot of Ruwenzori like the Duke and Wiese, but abandoned the intention on receiving a letter from Wiese informing him that the road was so bad that

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he had much better proceed from Beni to Mboga. We arrived at Beni again on the 23rd of February.

"From there Schubotz left for Lake Albert whilst I and our non-commissioned officer, Czeczatka, took the nearest way to Irumu. I selected that route as, except for a short distance before reaching Irumu, it leads through the easternmost portion of the great equatorial primeval forest, in the study of which I was deeply interested. Our march offered no further noteworthy episodes as we made our way along the broad *barrabarra*. Shortly before reaching Ngombe Njama we emerged from the stifling forest and breathed again as though freed from an oppressive weight, as our eyes swept once more across the free, beautiful, undulating steppe, resplendent in its garb of fresh green, and dotted at intervals with strips of woodland."

I may speedily pass over the marches that led us through the country at the foot of the mountain chain, as it was devoid of charm and presented nothing of interest. Tall elephant grass, radiating terrible heat, again retarded our march. The chopping knife had to cut a path through for us every day. This painful method of progression was, however, relieved in the Butalinga district by innumerable ravines about a kilometre in width, on the bottom of which extensive banana plantations were found; but climbing through these was a severe tax on the power of the carriers.

The path we struck was the old Stanley route. It seemed to us as though very little could have altered since the time of the great traveller. After a night march in full moonlight we reached Lepenge on the Semliki, which we immediately crossed. The few variations from the general monotony at this time, and not particularly enjoyable ones either, were a wound on my hand from an axe-stroke, really intended for a liane, which necessitated my going with my arm in a sling for a week; the falling of Vêriter into an elephant pit, whereby he was somewhat severely hurt; and finally the disappearance of our two guides, whom it had cost us considerable trouble to obtain. The terri-

tory to the west of Ruwenzori is reserved, and the capture and the killing of elephants forbidden. Thus the discovery of this nicely-arranged pit was a disagreeable incident for our two fine fellows. Anticipating certain punishment, they thought their best course would be to take French leave, and perhaps they were right.

After another two days we reached the market-place of Mboga. This very lively station is situated in disputed territory, that is in a strip of country divided by the 30 meridian, the incorporation of which was not at that time definitely settled. The neutrality and commercial freedom which ruled in consequence had not escaped the attention of the Indians and Arabians, who conducted a large number of stores there. Everything the heart of man coveted could be obtained at these "stores," and we ourselves did not let the opportunity pass by without replenishing our stocks of barter goods, preserved fruits, etc. Our carriers were jubilant, and fancied themselves in spirit in the busy life of their native cities Muanza and Daressalam. These innocent-looking shops also supplied goods to the two Boundary Commissions which had their quarters near at hand; but in reality they were the secret centres of a lively smuggling trade in ivory and rubber carried on in the most public manner. These two products were calmly borne along the street with the greatest audacity. Inquiries as to their place of origin were answered with a jerk of the chin in the direction of the vast primeval forest. The cunning dealer has his own private path, known only to himself, and hidden to the uninitiated. These paths are found by the blazing of branches, the strewing of leaves, and a hundred other signs. Many thousands of pounds of rubber and thousands of valuable elephant tusks are lost annually to the Congo State, despite the strictest supervision possible in the circumstances. Every means at the disposal of the Government are pressed into service to get rid of the sharks who rob the State of thousands of pounds.

Our arrival was announced by letter to the two commissions. Shortly afterwards Lieutenant Vangermais paid us a visit and

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invited us to Kiagodé, the Belgian camp about one and a half hours' distant. On the next day we made the acquaintance of Lieutenant Weber and the courteous commander of the commission, M. Bastien, who had been staying at the English camp on the Semliki, but who had hurried back on hearing of our arrival. We stayed there for a few days in most agreeable company, and had every attention lavished on us. All our desires were complied with immediately.

The camp, which was situated at a high altitude and fanned by refreshing breezes, consisted of roomy *matete* dwellings, and was in the province of the young chief Tabaru. An opportunity of exchanging greetings with him occurred on the day that we arrived, for he met us on the boundary of his territory.

As we intended to visit the British Commission working in British territory on the Semliki, we left the Congo State for a short period. The Russisi-Kiwu zone was the point of departure, and there we bade farewell to Vêriter, who returned to Rutschuru. For four months he had shared the pleasures and difficulties of the expedition, unselfishly furthering our interests, and endearing himself to us all; and his departure left a very considerable gap in our circle.

We started early on the 23rd of February, accompanied by Commandant Bastien, and arrived in a few hours at the watershed that divides the basins of the Nile and Congo. My amiable host left me there, and I rode forward alone with Wiese. We soon reached the edge of the mountains which bound the Semliki plain, and began to descend the steep road to the river. The difference between the oppressive heat there and the cool freshness of Kiagodé was most marked.

The immense plain, which was very sparsely vegetated, was alive with game. Moor antelopes and reed-bucks, detached or in herds, gazed across at us. At noon of the 24th we espied the extensive British encampment, and only a short time elapsed before we were shaking hands with Colonel Bright and the officers of his staff, who received us at the head of their military force.

Here, likewise, every wish that we expressed was courteously acceded to, and valuable information of all kinds imparted.

The sudden change from the oppressive heat to a cool temperature had affected Wiese's health. Consequently we claimed our hosts' hospitality for a day longer than we had intended, and then set out northwards towards Lake Albert, following the course of the Semliki. The river flows sluggishly, growing broader and then narrower again. Hippopotamus heads popped up here and there from the yellow waters, and on the sandy banks dozens of crocodiles sunned themselves; motionless, with gaping jaws, they formed a typical picture of indolence. Isolated borassus palms raised their curled heads aloft, their slender stems being mirrored on the water's surface as though conscious of their beauty. With their sandy surroundings they conjured up pictures and memories of Egypt. Detached villages dotted on the landscape here and there lent animation to the scene, although they appeared to be sparsely inhabited. Our thermometer registered 40 degrees Celsius when we pitched our tents in the neighbourhood of the bed of the Ethengi.

A few days later we reached the western marginal mountain of the rift-valley. On our right the plain gradually merged into a sea of reeds stretching on for an illimitable distance. With the aid of our glasses we descried in the distance the grey backs of elephants comfortably sunning themselves, although the shimmering waves of hot air rendered clear outlines almost impossible. At length we chanced on a small wood that promised cool, refreshing shade. On entering its inviting retreat there was commotion in the foliage, and crowds of monkeys, including beautiful specimens of the colobus, with long white-haired backs, sprang from tree to tree reviling us.

Our camp was erected at Boguma, close to crumbling, thatched huts which gave evidence of the activity of the British Boundary Commission. Unfortunately the trees around had been stripped of their leaves by the elephants to a height of many metres, and there was a struggle to reach those that held out the greatest promise of shade for our tents.

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I climbed on to a small plateau close to our camp, and from this coign of vantage my eyes roved over the incomparable panorama of an almost limitless plain. Expanses of reed-grass alternated with patches of elephant-grass, barren steppes and trees. The glistening waters of the Semliki completed a fine picture. In the far distance diminutive specks could be seen moving slowly hither and thither, and we knew them to be the slender bodies of antelopes. The sun poured down its fierce rays on us with terrible force. Standing there, lost in thought and gazing at the marvellous prospect, I heard sounds of lamentation behind me. Turning round I beheld my boy executing a lively Indian dance and hopping about from one foot to the other.

"What are you doing?" I asked laughingly.

"Master, the stones are so hot that my feet are being burnt," was the reply.

Putting my own hand on the rocks to test the assertion, I was compelled to withdraw it immediately for pain. A blister that instantly formed convinced me that my boy had not complained without cause.

In close proximity to our small camp we saw some dozen crocodiles basking on a sandbank. We made up our minds to kill some of these hated enemies of man which considerably heighten the mortality of the native races. First, however, I determined to utilise them as a welcome subject for my camera. Accompanied by Weidemann I crawled snake-like along the ground. At a distance of about 100 metres I raised the camera very carefully above the grass and "clicked." The slight sound, however, sufficed to create a certain uneasiness among some of the animals. So, lying on the ground, I hurriedly changed the plates and took a second snap-shot. The renewed sound caused one of the reptiles to draw near the water and others prepared to follow. Then I jumped up and shot six of them one after the other; four remained dead on the banks, whilst the other two, bleeding badly, rolled over into the water. The scene was an animated one; the animals tumbled over each other in their

hurry to hide their huge, ugly bodies in the water, which splashed and foamed as though it were boiling. We were able to repeat our adventure successfully on the next day, as Wiese's indisposition made it necessary to halt at the spot for a little time. On opening the stomach of one of the reptiles we were surprised to find it filled with an immense quantity of stones.

We reached the southern end of Lake Albert on the 1st of March, having espied the glittering surface of its waters in the distance on the previous day. On our way we passed an elephant standing isolated in the reed-grass, surrounded by a number of natives, who evidently thought of killing the beast. Our caravan was halted in order to watch the interesting spectacle, but as the hunters seemed unable to make up their minds to commence the attack, we approached with the camera and took a few photographs.

The water of Lake Albert is clearer than that of the turbid, loamy Lake Albert Edward. At Kassenje, where we halted, the mountain ridges are some 10 kilometres distant from the banks and run parallel with it. The lake's banks at Kassenje are free of reeds and only covered with rushes. Here Schubotz found a mass of moss animalcula (bryozoön). Dredgings yielded spoils of snails and shells. The plankton consisted mainly of daphniadæ and copepoda. The lake was notably rich in shad, whilst carp appeared to be entirely absent.

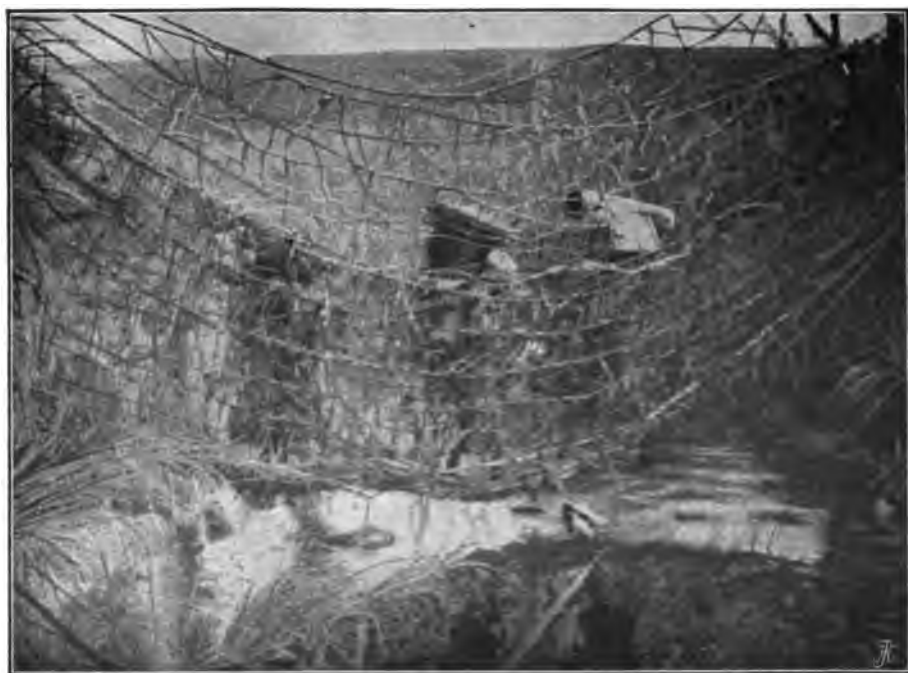
This lake is far less rich, from the naturalist's point of view, than Lake Albert Edward. Hippopotami and crocodiles are encountered chiefly at the estuaries of the rivers that flow into it, and ornithology is but poorly represented.

We made the acquaintance at Kassenje of the young chief, Dedoye, a son of Kawalli, at whose residence Stanley met Emin Pasha in 1884. Stanley's old camp was only two hours distant; the boundaries near Nsabe are stated to be still distinguishable. Dedoye remembered "Bulamadari" well. As a small boy he and his father had often spent days in company with Emin and Stanley.

The name "Bulamadari," or "Rock-blaster," by which Stanley



A HUT FRAME AT BAWIRA



A HANGING BRIDGE

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was known amongst the natives, is still maintained to the present day throughout the Congo territory. Europeans who by their prominence specially impress the inhabitants are designated "Bulamatari." The governor and the heads of districts are frequently given this name; I myself was honoured with it at times.

As little could be done in the way of enriching our collections at this lake, we left again very shortly, taking a westerly direction. After a march of two and a half hours we arrived at the foot of the mountains, having passed through a park-like, extensive steppe, thickly grown with euphorbia. The sun poured down unmercifully on the caravan, and thus made the ascent a torture. The stony parts were so hot that, if the carriers halted, the soles of their naked feet were burnt. At length we reached a mountain brook, clear and cool, and the entire caravan plunged into it without hesitation. Even the dogs jumped in with great eagerness. The camp was pitched without delay. As the sun sank, a beautifully refreshing breeze swept across the slopes, and our thermometer sank to 21 degrees Celsius. We breathed new life again. The heat had exercised a most enervating influence upon us, and our sleep had been of a broken nature, as we were continually waking bathed in perspiration.

The next morning, which was cool and overcast, saw us on our way to the ridge. Before us lay a wide, extensive plain, whilst behind us the sun pierced its way gradually through the mist. Lake Albert disappeared by degrees behind the mountain tops, and we lost sight of the Central African rift-valley for ever.

The strips of country we hurriedly traversed during the days following were reminiscent of Ruanda, and were populated by Bawira and Bawisha. The undulating land is poor in timber and sparsely sprinkled with *mtama* fields; game is entirely lacking. The nearer we approached the mountain dividing us from Kilo the more thickly inhabited became the country, and, naturally, the settlements increased too. The villages of the Bawira were striking in appearance and were erected in a circular form

around an open space. In some of the villages I counted forty huts, in front of which the men and women were idly squatting. Their clothing is of a most primitive description, the men wearing an almost invisible loin cloth, whilst the women have only a narrow string of beads round their hips for adornment. Large, flat wooden discs pierce their upper lips, and give the women a most peculiar appearance. This extremely strange custom is said to date back to slave-driving times, when women who were thus disfigured were spared by the cruel Arabs as worthless for slaves. Plausible as this supposition may appear, it requires proof. For the present it can only be regarded as a mere assertion. The cultivation of bananas and *bataren* (sweet potatoes) was prodigious, and rich harvests lay in the villages. We received a whole armful of potatoes for an old bottle.

At Bunya, a small military station, which, like all such places, consisted of a few huts and a store-house for Europeans, Lieutenant Boyton reported himself. Boyton, who was a Swedish officer, and afterwards in the Congolese service for some years, had been ordered to accompany us in place of Lieutenant Vêriter, who had been recalled.

We now wended our steps towards the heights through the Bawisha and Bakumu country, past the stations of Quadingo and Kitambala. Just before reaching the latter place the narrow path widened out into a small, well-kept *barrabarra*, which owes its existence to the skill of a Belgian engineer and had only been completed a few months. This road led from Kilo to Mahagi, the sole Belgian outpost on Lake Albert, and had been constructed with a view to subsequent automobile traffic. It, however, proved itself unserviceable, on account of sinking subsoil, and had to be abandoned. In its place the Congo Government has decided to construct a great automobile route from Kilo to Nsabe, on the western shores of Lake Albert. This road is to be made from a point lying opposite to Nsabe, on the eastern bank of the lake in British territory, on to Entebbe. As a matter of fact, the first 130 miles were finished in the spring of 1909. The Mombasa-Entebbe-Kilo stretch of road will be made negoti-



AN AURIFEROUS CREEK, KILO

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able in fourteen days. The spirit of enterprise evinced in this great work is all the more admirable when the tremendous obstacles offered by the nature of the ground to be traversed are taken into consideration. The region between Kilo and Nsabe is an undulating country intersected by gullies, and its elevations in the neighbourhood of Kilo attain a height of 1,600 metres, whilst the western ridges descend steeply to the banks of the lake. From the long mountain ridges one can see the thatched houses of the town, the environs of which abound with unalloyed gold.

The discovery of this rich and unsuspected treasure is of comparatively recent date. The Congo State is indebted for the find to Hannam, a prospector, who discovered many other copper and gold veins, and who, in consequence, enjoys great popularity and esteem. The workings were taken up on Hannam's advice. Brisk activity soon developed itself, and in the brief space of one and a half years the silent valleys of the primeval forest became busy hives of industry. Engineers and prospectors flocked there, and made rich auriferous finds in the creeks and valleys around. A busy mining industry is now carried on, and in 1908 there were twenty-one engineers and prospectors hard at work near Kilo. The majority were Australians, familiar with nearly all the important mines on the globe. Mr. Mertens, who bore the title "*Représentant de la fondation de la couronne*," officiated as director, and had charge of all correspondence. At that time the pay-sheets showed a total of eight hundred workers.

The chief wealth of the soil consists of alluvial gold, which is found all over the district at the very small depth of from 1-50 metres on the bed of the creeks. This fact is of extreme value to the industry, as it saves the acquisition of costly machinery and permits the construction of sluices, which are worked by negro labour. These sluices consist of wooden troughs, similar to those in cottage mills, and are furnished with bottom boards. The auriferous soil is shovelled into these troughs, and a constant flow of water gradually washes away

the stones, sand, etc., whilst the gold sinks to the bottom, in consequence of its specific gravity, and settles in the clefts and crevices of the boards. Pieces are found of the size of a pea or bean intermingled with granular gold, whilst the lighter refined gold flows on with the sand and is caught on the table at the foot of the sluice (a square board in which a number of hollows have been made). The biggest nugget found up to the middle of 1909 had the very respectable weight of 300 grammes, and another weighed 150 grammes.

When we visited the place five "champtiers"* were in operation, on each of which a sluice was kept going. Probably this number has been increased since then. The sluice gold is collected once a month, the amount, of course, varying according to the richness of the creek.

The gross amount taken monthly at Kilo when we were there came to about 30-35 kilograms, valued at from 90-100,000 francs. This, however, was only a small amount as compared with the wealth that the soil contained, and could easily have been quadrupled if the prospectors had been more energetic, if the negro labour had been better controlled, and if more sluices, etc., had been constructed.

The gold collected is refined by a chemist in a laboratory at Kilo, and then re-melted into ingots the size of bricks, each worth 37,000 francs. The first large consignment of these ingots, valued at 1,000,000 francs, had been sent just before our arrival to Herr Schulz, the German Vice-Consul, the representative of the Victoria Nyanza Agency. From there it was transmitted to Brussels.

So far it has not been possible to ascertain the precise limits of the gold region. As, however, the area is an enormous one, it is not to be wondered at that up to the present no creek has been worked without result.

Reef gold must also be taken into consideration. No shaft had been sunk when I was there. The rivers Shari and Ituri carried, however, so much gold that the management, following

* Workings on the creek.



A BAWISHA LIP ORNAMENT



THE ITURI AT SALAMBONGO

a sudden impulse, had decided to have a dredge sent out at a great cost—a somewhat premature purchase. In any case, the prospectors were not unanimous in their opinions regarding a suitable spot for it, as in places the rivers rush along over rocky ground, and sandy subsoil is rarely found.

As the "champtiers" lie amidst beautiful forest scenery, an hour or so distant from Kilo proper, which is also a military post, the prospectors are lodged in camps. These consist of cleanly, *matete* huts, and lie along the wooded, hilly ridges in the neighbourhood of the workings.

As is the case in every new undertaking, there were a great many defects and blunders in the administration of Kilo, which contributed to the trammelling of the workers; these, however, will disappear during the course of time, and I have reason to believe that the industry is already being carried on in a considerably more energetic and practical manner. In any case, Kilo is a place capable of immense development. Undreamt-of treasures lie hoarded up there by Mother Earth, which, if experts can be believed, hold out the promise that the little place will become some day one of the most important gold centres in the world.

We all had reason to be grateful for our interesting experience at Kilo. Foreign visitors had never before been received there; never had an outsider been privileged to obtain a glimpse into the Kilo gold workings. We left with a feeling of great satisfaction—Wiese, Boyton and I—and proceeded on our way to Irumu, through the territory of the Baniari. Skirting the edge of the forest, along a bad native path, and over the hill summits, we pushed on until the path widened out into the *barrabarra* in the vicinity of Salambongo. There we found a large Wambutti camp, whose chief had sent the hunters into the interior of the forest to kill a *solì*. In the hope that we might perhaps acquire an antelope of such immense zoological value, we halted for a day to await the results of the hunt. We made use of the leisure thus afforded us to photograph and take measurements of the

pygmy women and children who remained in the camp. We also had an opportunity of adding to our piscatorial collection, as the Ituri flowed direct through the settlements. We tried our trusty dynamite method again, but we had to fire one or two charges before we discovered a spot where the fish congregated. Then, however, the result obtained passed all expectation, for after having set aside in methylated spirit all the specimens required for our collection, such a surplus remained that almost every one of our carriers was able to enjoy a fish for his supper.

In the afternoon the prospectors, Messrs. Crawlay and Giliot, arrived quite unexpectedly from Kilo with the intention of investigating the auriferous contents of the river-bed and its vicinity. To accomplish this object they were forced to cut a path for themselves through the jungle on both banks of the river, as well as to dig up the soil and collect samples every 5 kilometres. They reckoned that the return march would take them about three months.

At nightfall the pygmies returned from the hunt. But, alas! with no result. So, although our hopes were dashed, we tried to console ourselves by watching the dances of the natives before their camp fire.

Wiese, in particular, had an exceptional opportunity of studying these. I had already settled to rest, and deep silence reigned in camp, when he heard singing and the beating of drums in the direction of the Wambutti huts. He went out in the moonlight, followed the sound of voices, and came on the dwarfs, male and female, standing in a circle. He thought himself in the land of legends. His tale next morning was as follows: "Two men were squatting in the centre, with tambourines, beating them in measure, while those standing sang melodiously, sometimes in a slow and melancholy cadence, sometimes very quickly and gaily. First their little legs would start dancing on the spot where they stood, then they would move round in a circle to the left or to the right. I was much struck with the motion of the upper part of their bodies. The little



PYGMIES AT SALAMBONGO

folk exhibited tremendous suppleness in their hips, and in dancing bent themselves so far backwards that I feared they would break their spines. The dance concluded with a somewhat affected pose that reminded one of the first awkward attempts of an amateur ballet troupe. Whilst the circle danced and sang, a man and woman leapt into the centre and played at catching one another. The way in which the one constantly eluded the efforts made by the other in the comparatively small space was a marvel of skill. Whether there was any deeper meaning underlying the dance, I was unable to find out. I was amazed at the abandon that the small people threw into their dancing, neither were they disturbed in the slightest degree at my presence."

On the 16th of March we saw the houses of Irumu in the distance. Soon after the head of the caravan arrived at the Shari River, which flows past below the outpost. Familiar faces welcomed us farther back, and a few moments later we were shaking hands with Mildbraed and Czechatka, whom we were glad to find in the best of health and spirits. *Chef de poste* Tillemans and M. Bernstein, the only two officials connected with the administration at Irumu at that time, also came up to meet us.

Irumu is an unusually large outpost, held officially by ten Europeans, all of whom, however, excepting the two mentioned above, were away on Government service. The place owes its importance to its favourable position, as it is the junction of the great military roads from Stanleyville to Fort Portal and Rutschuru to Beni and Kilo. Thus nearly all Belgian officials whose jurisdiction leads them to the northern districts of the Congo State are compelled to pass it. In consequence the traffic through Irumu is brisker than at any other outpost. This cheerful-looking place, which consists of a row of thatched brick houses, spacious messrooms and two great store-houses, is situated on a hilly plain three hours distant from the eastern margin of the great native forest.

As elephants abound in the neighbourhood, the quantity of ivory brought in by the natives is very considerable. Eight to nine hundred kilograms leave for Boma every month, and are

placed to the credit of the Congo State. Irumu, however, has to be content with an inferior position as regards the yield in rubber, on account of its distance from the forest's edge. The monthly harvest amounts to only some 500 kilograms. This is an insignificant quantity when compared with that obtained in the main rubber centres—the Aruwimi and Uelle basins, Nepoko, Avakubi, Bomili, etc. There, during the best years, 7,000, 10,000, and even 14,000 kilograms are produced monthly. Yet the rubber-tree plantations are exposed to special peril, as refractory natives lop and pull down the biggest and most valuable trunks of the *Funtumia elastica* and the gum-yielding liane. The insubordination of the population in the districts lying between the Aruwimi and the Uelle assumed previously such a threatening character that a punitive military force was despatched there. The *Chef de zone*, resolute and trustworthy Commandant Engh, a Norwegian by birth, had to proceed to the scene to restore order; and through his own wariness and discretion, as well as that of his officials, this was eventually accomplished.

Rightly recognising the danger that threatened the rubber industry in consequence of the hostile attitude of the natives, the Congo State has for some years established great rubber plantations; in fact, we came across them at all the more important European stations. The plantations, however, being only of recent growth, it has so far not been possible to determine decisively which sorts are most suitable for cultivation.

The nature of the ground has been taken into account generally, and those varieties selected which flourish best under similar conditions in the virgin forest. Commonly, the *Funtumia elastica* is given the preference, as it grows much more rapidly than the rubber vine. Whilst the tree can be tapped, without injury to its growth, after a period of six or seven years, the vine can only be turned to account after twenty years. The cultivation of the liane, therefore, is on the decline, and they are only grown where the *funtumia* will not flourish.

At all European stations one plant must be put in the ground



IRUMU



THE ITURI AT IRUMU

for every two kilograms of rubber delivered. This order, practical as it may seem, is not feasible, the amount of rubber obtained being too great. In order to conform properly with the extremely prudent regulation, it would be necessary to employ an immense number of labourers in rooting, planting and clearing the plantations. As a matter of fact, most enterprises in the country suffer from an insufficiency of labour, as has also been the case in German East Africa. At Avakubi we saw a plantation of 742 acres, and another at Nambuya of 1,976 acres, where there were hardly sufficient labourers for planting alone. When the time taken in clearing is remembered, as well as the fact that any part of the plantation which has been cleared is choked with grass a metre in height about four to six weeks later, which threatens to kill the young plants, some little idea of the tremendous difficulties which beset the cultivator can be gathered.

I must not omit to add that the coffee and cocoa plant is cultivated at most of the Congolese outposts. Whilst the latter product is used for the export trade, coffee (*Liberia*) is retained for home consumption only.

We remained fourteen days at Irumu. I was awaiting the arrival of the other members of the expedition at the end of the month, having fixed this place as a rendezvous before our departure for the Congo on the 1st of April. The interval was employed in making excursions in the neighbourhood. Dr. Mildbraed went to Ngombe Njama, on the edge of the forest, for a few days, whilst Schubotz roamed about in the vicinity or fished in the Shari. We also attended to our mail, wrote to the firms at Lake Victoria and on the East Coast concerning our march to the west, drafted letters, drew up reports, and commenced packing our latest collections for despatch. These were to be conveyed to Entebbe by our faithful carriers, who were there discharged and sent home. They were wretched and worrying days for Wiese, who, amongst other things, had to examine and revise the claims made by the men. Pay-sheets

had to be carefully examined, disputes settled, and the men convinced that everything was just and in order; further, each man had to receive his travelling "*posho*" (food-money) in ready-money, for the purchase of stores for the return journey to his native place.

After having received a handshake as a farewell from each one of us, they marched away homeward bound in detachments, each under its particular head-man. It was with a feeling of regret that we saw them leave us, after having shared our pleasures and trials for nearly a year. Through good and bad days, in the heat of the steppes and in the icy breath of the snow-capped volcanoes, they had fulfilled their duty loyally, like tried and trusty men. We dismissed them here in order that they should be spared the long return journey from Avakubi, some thirty days' march farther ahead. Till then we contented ourselves with carriers from the Congo territory. The march was to terminate at Avakubi, as we intended continuing our journey from there to the Congo by native canoes upon the great tributary, the Aruwimi. The troops of the expedition were to escort us through the forest until we reached the river.

Czekanowski arrived on the 27th, after his wanderings, which had led him as far as the Uelle. He had endured a good deal in consequence of the violent rains, from which we had, fortunately, been spared from the time that we quitted the neighbourhood of Ruwenzori.

In Irumu, however, we prepared to encounter a third rainy period, the advent of which was expected daily; and, in fact, in the evenings we saw the clouds gathering threateningly together, accompanied by sheet-lightning in the distance. A little later showers set in daily. They announced their arrival by violent winds of sweeping force. On the afternoon of the 30th March the south-western heavens grew coal-black. The heavy rain advanced towards us in an opaque steel-blue mass, sharply defined at its sides. At one kilometre's distance from the station it was pouring down in torrents. Thus we were able to observe all the phases of this vivid spectacle of Nature without being



A "STATION" VILLAGE IN THE CONGO PRIMEVAL FOREST ON THE WAY TO STANLEYVILLE

drenched ; but the storm reached us before long. Setting in with suddenness, it burst on the buildings of Irumu, tore and tugged heavy trusses of straw from the roofs, and swept them far away. The rain rattled at the doors and poured through the crevices into the rooms, so that all our writing materials were whirled and swirled around. Outside it was almost impossible to stand erect. The hurricane, however, disappeared as suddenly as it had come, and a quarter of an hour later the debris lying around was all that remained to remind us of our unwelcome visitor.

It is futile to attempt a description of tropical tornadoes at their full force. One must see these phenomena to conceive an accurate idea of them. Their grandeur is then printed indelibly on the memory. In two or three quarters of the heavens inky darkness gathers, then come flashing lightning and crashing thunder, with such crackling that it seems like Hell let loose. Lightning flashes along the horizon and the whole firmament seems to be illuminated at times as though by gigantic torches. Watch in hand, I have counted one or two such electric discharges to the second.

Czekanowski had found such noteworthy material for investigation during the Uelle expeditions in the territory of the Mangbettu that he harboured the wish to return there. As he asked for a further three months for this purpose, he foresaw the necessity of returning home alone. We therefore said good-bye a few days before our departure, with a confident "*auf wiedersehen* in Europe."

As the time fixed for the rest of us to leave was drawing very close, and as we had no news of Kirschstein, despite various letters and written instructions that I had despatched, his silence began to cause us uneasiness. We thought that we should be deprived of the company of our kind and jolly comrade. I will state here that, unfortunately, our fears were confirmed. Almost immediately after we commenced our peregrinations into the shady interior of the great African forest news reached us of the catastrophe at Karrissimbi, which cost Kirschstein half of his

followers. As we learned later, on our arrival in Europe, the aggressive attitude of the natives south-east of Mount Muhawura, more particularly the attack by the chief Lukara, was responsible for the subsequent delay. This sultan and many of his warriors had lain in ambush for the geologist's caravan and barred its path. As soon as the first arrows came whizzing over Kirschstein's head he was forced to defend himself. A fight was quickly in progress, but, despite heavy firing, the enemy would not budge. Ever and again the enemy's bowmen were spurred on to fresh onslaughts by a fellow in a red toga, who danced before and around them with wild and furious gestures. Kirschstein aimed at this man, and succeeded in shooting him down. Then only did the savage hordes, deprived of their leader, begin to yield. In spite of this, Kirschstein was in a very critical position, for when the cartridges were counted after the fight their total for the whole caravan was eleven. In order, if possible, to stave off a further attack, he caused threats of terrible punishments, in case the onslaught should be renewed, to be proclaimed throughout the district by means of a crier. This intimidatory measure fulfilled its purpose; Kirschstein was left in peace.

As his stores were beginning to give out, he sent letters to me begging for provisions. At the same time he asked for instructions and information as to the intentions of the main caravan. I never received these letters, nor did Kirschstein receive mine asking very urgently for an explanation of his absence. No doubt they were simply thrown aside by mail carriers, who were recruited from the natives, or stolen by *force majeure*. Thus, without any news and in a great state of uncertainty, further delay on our part would have been fruitless. Beni and Rutschuru were communicated with by means of reliable messengers, and letters deposited there for Kirschstein.

In Irumu packing proceeded apace. The day for departure dawned. How we missed our faithful Wassukuma and Manjema, who knew their individual loads even at a distance! Things



VIRGIN FOREST SCENERY

Through the Semliki Valley 237

were changed, for each man had to have his load apportioned to him before the start. We knew, moreover, that in the days to follow frequent changes of carriers would take place. Thus we resigned ourselves as well as we could to the petty bothers that were in store for us. Despite all this, however, and despite torrents of rain, the Europeans' faces lit up. From now our course was directed homewards.

CHAPTER IX

IN THE SHADE OF THE VIRGIN FOREST

WE started on our journey to the west on the 1st of April, 1908, by a route which has gained sad notoriety in the history of African exploration. We followed a path almost identical with that which Stanley traversed and on which he experienced the greatest hardships and privations in coming from the Congo to the succour of Emin Pasha, who, cut off by the Mahdi revolt, lived practically a prisoner in his equatorial province. The same vast forest, so gloomily described in the pages of "In Darkest Africa," lay before us. This darksome forest, indeed, with its storms and rains, famine, disease and deadly attacks, nearly proved fatal to the whole caravan and reduced it to a condition of utter desperation and madness. The first patch of green grass appeared to us as a token and promise, as the olive branch in the mouth of the dove did to Noah of old.

We were travelling along paths which had already been made; we knew in advance where we should lay our heads to rest from day to day; we were well supplied with stores; we journeyed more comfortably here than we did at first in the steppe country, or in the volcanic region, and yet we experienced that oppressiveness which is always felt in this gigantic forest. The conditions of travelling alone were different; the forest remained the same in its immeasurable and inexorable lonesomeness.

The departure took place under inauspicious conditions in streaming rain, which had set in violently during the night, though unaccompanied by lightning, and had compelled many of us to wander about with our beds as the water penetrated the houses. The confusion usually in evidence when quarters occu-



A FALLEN GIANT : CONGO VIRGIN FOREST

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pied for a considerable time have to be abandoned was still further increased by the breaking-in of two hundred unpractised Congolese auxiliary carriers. Then there was the rain! But the weather was in accordance with our general condition of depression as we set out at last, accompanied by our escort, under Lieutenant Boyton. It cleared up before long, and after three and a half hours of marching through pleasant, hilly and undulating steppe land we reached the boundary of the dense West African forest, from which we were not to emerge for a period of two months. An hour later we reached the Ituri, a hundred and twenty metres broad at that spot. We crossed it in a dug-out, the transit of our riding animals causing a good deal of trouble, and went into camp at Kifuku, the old Irumu, and the first of the fixed camping quarters which have been erected throughout the whole Irumu-Stanleyville route at intervals of fifteen to thirty kilometres. They serve for the convenience of passing Europeans and the officials of the Congo State, who, coming from the Congo, wish to reach the upper Ituri district or Beni.

The serai in these encampments nearly always presents the same appearance; a clay hut, usually thatched with phrynium leaves, and consisting of two almost cubiform "rooms," divided in the middle by a broad corridor. A raised gallery, called the *barasa*, runs under the wide, projecting roof. The little brick houses, often very pretty ones, at the stations are for the most part built on the same pattern. In the serai the floor is usually formed of stamped clay, and a primitive form of table is often placed in the hall close to the *barasa*. I have been reckless enough to repose in these *barasas*, although aware that the roofs are by no means always watertight and fever relapses are sometimes brought on from resting in such places. As a protection from the rain, I used to draw a wrapping of balloon material over the roof, a stuff that has often rendered excellent service as a covering for the loads and as a rain-tent for the carriers; then I felt safe. These houses, however, are always pleasant to spend a halt in, especially the "hall," which is used as a

mess-room. It is much cooler inside them than in the tents, and the heat and blinding glare of the sun are never felt so keenly as, when at the end of a march, one emerges from the shade of the native forest and enters the clearing around the serai and its village.

At all these stations one meets "*Arabisés*," as they are called by the Congolese, or "*Wangwana*" (the Educated Ones), as they call themselves in the Kisuaheli tongue. Ethnographically they represent a quite inextricable *mixtum compositum* of Arabs, east coast and inland negroes, Manjema from west of Tanganyika, and natives from the eastern districts of the Congo State. They are offspring and descendants of those slave and ivory hunters with whom the Belgians had to wage such fierce battle, remains of Tippoo Tib's hordes of the Aruwimi-Ituri district, the Ngarruwas and Kilonga-Longas—the oldest of whom still remember Stanley well. Of course there are others, too, who have come to the Congo in later years in the train of the Arabian dealers. They speak Kisuaheli, richly interspersed with native and Arab expressions, sometimes called "*Kingwana*"—the language of the Wangwana. In any case, the designation *Arabisés* is a fitting one. They wear long Arabian garments and turbans. Many of them show the strong admixture of Arabian blood very plainly, though one seldom meets pure Arabs. There are, doubtless, some shady customers amongst them, and it is certain that, besides their lawful business, they carry on extensive smuggling in rubber and ivory over the German and English boundaries—after all, a peaceful and innocent occupation compared to that of the days of their youth, when, before the establishment of European rule, the Congo was a land full of horrors. Their official activity is limited to keeping the stations and the roads in order, and in providing the Europeans and carriers passing through with provisions and stores. Manioc and sweet potatoes are principally cultivated in the clearings, also rice and maize. The Wangwana did not grow bananas to any extent; they complained that the elephants made too much havoc amongst them.



THE ITURI AT MAWAMBI



A FOREST FERRY ON THE ITURI



A BRIDGED OBSTACLE ON A CONGO VIRGIN FOREST PATH

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The road which connects the stations, the *barrabarra*, may best be compared to a woodland path or lane. It winds through the great African forest, about four metres in breadth, unbroken by any glade, the smaller trees and the undergrowth simply having been cut away. The larger trees remain, and create no obstacles, as the only part which is used is a well-trodden footway in the centre. The negro always marches in single file. Should one of the giants of the forest crash down and block the roadway, it is usually left lying, as to clear it away would necessitate a good deal of trouble, hardly proportionate to the benefit accruing to the roadway. A short detour is usually made around the obstacle by cutting a small bypath in the interior of the forest or by building an extempore bridge across it or by making steps. The bridges over the numerous small brooks and through swampy dips are the vulnerable points of the route. In parts they are simply corduroy roads, though often sturdier trunks are laid lengthways, with round logs and boughs lying across them, the gaps being stopped with clay and earth. These constructions are deserving of all praise and are quite practicable for pedestrians and, if of recent construction, even for horsemen. Unfortunately, however, they are also used by passengers for whom they are absolutely not intended, namely, by elephants. The constructions, which, after all, are only primitive negro handwork, are naturally not adapted for such weights, and thus the older bridges and dams sometimes seem to consist of "a number of holes joined together."

Our marches proceeded monotonously from station to station, and the longer we travelled without incidents worthy of remark the deeper was the impression made upon us by the great forest. I believe a long stay in this forest would lead to heavy mental depression in sensitive men. The unutterable feeling of oppression which makes itself felt in the course of time lies in the absence of any free view, the impossibility of permitting the eye to rove freely across a wide space, or of once catching a glimpse of sky and earth merging in the far horizon. Only a short stretch of road can be seen ahead; you are hemmed in by

thickets which prevent you from penetrating the green depths on either side, and, on gazing upwards, the dense canopy of foliage overhead forbids an untrammelled view of the heavens to the eyes so wearied with eternal green. On coming to a glade, the green walls rise implacably up to a height of forty metres, and the traveller can only be compared to a prisoner who has exchanged the narrow confines of his cell for the prison courtyard. The forest is oppressive in its monstrous hugeness and density, filling up all the space from the ground to the highest tree-tops. Thus we could understand how it was that the Belgian officials found their *forêt vierge* deadening and soul-killing, and often spoke with mild horror of the march through the forest from Stanleyville to their stations on the eastern boundary.

To those coming from the open plains, animal life here appears to be extinct. Just as the ocean voyager can see little of the wealth of life concealed in the sea, so we could discern nothing of the rich animal world hidden in the depths of the interior of the forest. It is true that we came across many tracks of elephants and buffalo, but we never saw the beasts themselves; the birds were silent, and not even monkeys enlivened the motionless trees. It was not until we were a little way from Mawambi that we saw somewhat more of the fauna. At the start monkeys abounded, but they were scared away by Mildbraed. He was the first of us to arrive in Irumu from Beni, and as he found his hands idle there he marched off in advance, so as to have more leisure for collecting; he was to await our coming at Mawambi. When he shot down the boughs from the tree-tops he did not spare their four-legged inhabitants; he showed us some colobus species, black mangabeys (which look like devils), and a green monkey. At night we often heard elephants in the darkness amongst the banana fields around the station, breaking down the shrubs and generally creating havoc.

Until we reached Mawambi we had thunderstorms almost daily, but fortunately they did not break out till the afternoon or during the night. The loamy ground was in a state which did not conduce to pleasant travelling. The air was so saturated



A STREAM IN THE CONGO FOREST

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with moisture that the forest was filled with a hot-house atmosphere and a disagreeable smell of dank decay and mouldiness. Sometimes the rain helped to vary the deadly monotony of the day. At the station on the Epulu, which flows into the Ituru from the north-east, I sat in my tent on the 6th of April, indifferent to the rain, with my attention riveted by a perfectly "new" newspaper article written early in February. Suddenly I became aware that I, my table, and my chair were resting upon a solitary island. My tent had been carelessly erected in a small hollow, and all the rain-water in the place was flowing into the depression. Great dams and skilfully constructed sluices eventually diverted the flood water away. On another occasion Schubotz was caught. The heavy rains had made his tent-ropes shrink to such an extent that they tore the tent-pegs out of the ground, and the whole structure fell in, burying the sleeping proprietor beneath it.

Our route took a curved direction from Irumu, through Kifuku, Cambi ja Wambutti, Mokoto, Mamulambi on the Epulu, Songolo and Agwama, to Mawambi on the Ituri. The river bends to the south, and Stanley's road runs between. At Mawambi we were met by the *Chef de poste*, M. Athanasoff, a Bulgarian, and by Mildbraed, who was smiling contentedly. He had evidently had the best of it on this march. He had gathered rich booty amongst the exuberant green vegetation, and, with the botanist's trained eye, had found much interesting material which would naturally lie hidden from the layman, however great a lover of nature and keen observer he might be.

Mawambi is only a small post, possessing a *Commis d'état*—M. Athanasoff already mentioned, the only representative of his nation in the somewhat motley assortment of Congo State officialdom—and a non-commissioned officer, a Swede, the commanders of the small troop of Askari. The station yields about a ton of rubber monthly, the natives being pledged to bring in three kilogrammes per head in that time. About eight hundred kilogrammes of ivory are also sent from this place to Boma yearly for the State.

The station is prettily situated on a hill above the banks of the Ituri, which flows very broad and strong at this point, but is not very deep; and we could enjoy a beautiful view of it from the *barasa* of the mess-hut. As we were able to see not only across the river, but also had an uninterrupted view over a considerable portion of the forest, we felt we could breathe freely again.

After a halt of three days at this pleasant little station, we started off again for Avakubi, in a southerly direction from the river.

Animal life revealed itself more abundantly as we proceeded. In the proximity of Mawambi there is a species of dwarf antelope which appears to be very plentiful. They are caught in gins and traps by the natives, and brought in to the station alive but cruelly bound, where they make a valuable addition to the menu. We hoped to have been able to bring one or two of these charming creatures back to Europe with us alive. At first I let them run about freely in my room at Mawambi, and they soon gained such confidence that I could feed them. Unfortunately, these exceedingly delicate beasties, of which we obtained five, succumbed in spite of the most attentive care. Two baboons bagged by Wiese formed a remarkable capture, remarkable on account of their being met with at two hundred kilometres in the interior, for it had always been assumed that the margins of the forest, with the natives' fields, to the fruits of which they are very partial, formed their particular reserves and hunting grounds. At one camp we got a young long-tailed monkey from the Wangwana, an attractive creature, with dark fur and a white triangular spot on the nose. She was perfectly tame, but nothing on the dining table was safe with her. Owing to her amazing Semitic-like physiognomy she was called Rebecca. At Avakubi we procured a husband for her, and we saw there a young chimpanzee, who looked like a patriarch, and patiently permitted all kinds of pranks to be played with him.

The feathered inhabitants of the forest are far less in evidence than one would be inclined to believe, as the height of the trees



"REBECCA"
(*Cercopithecus Schmidt*)



WANGILIMA (ARUWIMI)

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and the dense undergrowth conceal the majority of the species from the eye of the observer. The birds most easily discerned are the great white and black hornbill, the immense turacus and a shrike, first discovered to us by its sweet song, the only really good forest singer. The insect world is very strongly represented. There is a species of cicada, almost imperceptible to the eye of the traveller on account of its protective grey colour, which matches the bark of the trees ; it is about four centimetres in length, and its exceedingly shrill, almost metallic, chirp fills the woods with a noise which, as Stanley said, surpasses the "warbling" of the Manjema women. There are gorgeous diurnal butterflies, the West African *nymphalidæ* predominating, which flutter in crowds at the brooks and moist places on the way, or on the ordure of mammalia, and fly up in clouds in front of the caravans. The beetles are less noticeable, but at times goliath-beetles are to be found, something like colossal editions of the rhinoceros-beetles, which belong to the very largest of their order. Little black wasps become a great source of annoyance at times ; they build their nests, which look as though they were made of coarse grey-brown paper and resemble wind-sails, in the boughs of trees. They are often the cause of serious confusion in the caravan through their very painful stings. The ants, however, play the chief rôle among the representatives of the lower animal world in this forest. The termites, or white ants, erect strange structures propped up against the trunks of trees which make one think of pileated mushrooms ; the house-ants hump the earth high up into the tree-tops, where among the boughs they construct habitations which bear such a striking resemblance to monkeys sitting quietly that we sometimes grasped our rifles and very nearly pulled the triggers. Small ants cement up all the gaps in the leaves of the underwood with earth and refuse, and fall fiercely upon any invader who attempts to cut his way through. Then there are reddish-brown ants, about the size of our wood ants, which march in thousands along the road in close formation, a respectful way always being made for them by all who cross their path, as they bite fearfully. The most interesting of

the ants is a fairly big, very slender and perfectly black ant, which inhabits the hollow, horizontally projecting branches of a small tree, *Barteria fistulosa*; they present everyone who, through ignorance or carelessness, touches their tree with a very memorable souvenir, as their bite is so painful that one feels it for twenty-four hours at least.

It rained somewhat less now and it was considerably warmer (31-32 degrees Celsius, atmospheric temperature). When we stepped into a clearing after a march we were forced to recoil from the glowing heat and the blinding glare. We also learned the full significance of tropical storms. They had a more thrilling and terrifying effect here than in the open plains. It made an overpowering impression upon one to watch the tornado seize the giants of the forest in its mighty grasp, bending and tossing them hither and thither, while the green sea of tree-tops surged and roared like the wild waves of the ocean. I never saw this forest look so beautiful as when lashed up to conflict from its habitual calm serenity.

On arriving at the third station after Mawambi we found Commandant Engh, *Chef* of the Ituri district, awaiting us. As he was to escort us from this point, Lieutenant Boyton returned to Irumu. We were all very sorry to part from him. A very agreeable companion and an excellent adviser, he had been of inestimable service to us during the six weeks of his escort.

On the 22nd of April we entered Avakubi by a broad, well-kept road, and came on an enormous open space of ground, where the Congo flag was waving from a tall mast. The garrison and all the station hands were paraded, no fewer than seven Europeans being on the right flank. Avakubi is a large station, with splendid avenues of oil palms, straight roads, with pretty brick-built houses, and shady mango trees. A large Wangwana settlement lies at a little distance from the station, in which a few Arabs have established themselves as dealers. An official dinner took place on the evening of our arrival; the "official" part of it, so far as I was concerned, consisting in the fact that I wore a starched shirt and a black tie, for the first time since

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June, 1907. Father Superior Wulfers,* of the neighbouring mission, was also present. The next day I paid a visit there alone. The mission is very prettily situated in a glade, and makes a cheerful as well as a very imposing impression, with its new brick-built houses, which, especially the large church, bear a resemblance to the Romanesque style.

On the 25th of April we sent our trusty Askari home. As they paraded before me for the last time with all their old habitual discipline, I thanked them for the loyal services which they had rendered during the past twelve months. I can give them an excellent testimonial. Faithful, and more than faithful, in their duties, they never, with very few exceptions, gave any cause for serious complaint. Some of them had to look after the safe conduct of the scientific collection loads to the coast, and so were separated for months from the expedition; others had to hasten with mail matter from one *safari* to another on journeys lasting for weeks at a time. In spite of all, excesses were never committed. The conduct of these soldiers bears eloquent witness to the excellence of the German methods of drill and instruction, which even in the absence of superiors shows no relaxation of discipline.

As a conclusion to this chapter I should like to attach a few general statements made by Dr. Mildbraed concerning the forest, in which he briefly sketches one of the most important results of our botanical collections:

"One often comes across conceptions, even in recent works, regarding the extent and character of the African tropical forest and the so-called Equatorial forest, which do not correspond to the reality. I will quote a few such instances:

"... Its extent alone is smaller, compared with the Malayan and Brazilian forests; it is limited to a relatively narrow strip on the Guinea coast to the Cameroons, and farther south to the Gaboon and central Angola. Thence eastwards it extends,

* Father Wulfers met with a fatal accident whilst travelling on duty in the spring of 1909.

impoverished and alternating with savannahs in the Congo region, to the great lakes,' etc. Or again, 'The great, gloomy, Equatorial forest, which has no connection with the coastal forests, and which was traversed by Stanley, Emin Pasha, Count Götzen and a few other travellers, stretches deep into the interior of the Congo territory. It cannot in any way compare, however, with the virgin forests of Brazil or of the Sunda Islands.'

"Regarding the first quotation, the point at issue is not that of a vast uninterrupted forest in the Congo basin; it is an accepted fact that broader or narrower strips alternate with savannahs there; in the second quotation the existence of an Equatorial forest is recognised, but the character of tropical virgin forest and any connection with the woods near the West African coast is not allowed.

"In contrast to these statements I would like to quote a sentence from Stanley: 'Visions of Brazil may be conjured up in the Congo basin; the river itself is reminiscent of the Amazon, and the Central African forests of the immense forests of Brazil.'

"From the Cameroons and Gaboon coasts of the Atlantic Ocean, the waves of an African virgin forest surge uninterruptedly up to the foot of the Ruwenzori Mountains in the far east; it is only laced in by savannahs like a narrow strait between the most south-easterly point of the Cameroons and the Ubangi. Now, if we take only the eastern portion of this hemmed in part, the actual Equatorial forest, we perceive an immense mass of forest bounded by the curve of the Congo-Lualaba from Coquilhatville, on the Equator, to Nyangwe; farther by a line from Nyangwe to the Burton Gulf of Lake Tanganyika; in the east approximately by the western edge of the Central African rift-valley; in the north by the Uelle-Ubangi; and in the west by the Ubangi in its lower course. Then comes a junction with the forests of the south Cameroons. This forms a territory in round figures of 600,000 square kilometres, whose connection with the genuine tropical forest is unbroken, either by mountains worthy of the name, or by any strips of pasture



A GLADE IN THE VIRGIN FOREST

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land; a forest reserve which, as a compact whole, cannot be equalled save in the basin of the Amazon.

"The question remains: Is this forest genuine virgin forest, tropical forest of typical formation? Surely the greater part must be. I will fall back again on Stanley. He says: 'Imagine the whole of France and the Iberian Peninsula densely covered with trees 6 to 60 metres in height, with smooth trunks, whose leafy tops are so close to one another that they intermingle and obscure the sun and the heavens, each tree over a metre in thickness. Then ropes stretching across from one tree to another in the shape of creepers and festoons, or curling round the trunks in thick, heavy coils, like endless anacondas, till they reach the highest point. Imagine them in full bloom, their luxuriant foliage combining with that of the trees to obscure the sunlight, and their hundreds of long festoons covered with slender tendrils hanging down from the highest branches till they touch the ground, interlacing one another in a complete tangle.' That sounds highly fantastic, but making every allowance for Stanley's journalistic heroics and extracting the kernel of fact, his description is fairly accurate.

"This forest possesses the distinctive characteristics of the tropical virgin forest in the great height of its trees, its numerous liane—the most striking amongst them being the Rotan palm—and the many orchids and other parasites.

"There are many other biological peculiarities which prove its typical tropical character.

"There is yet another question: How does the flora of the Equatorial Forest compare with that of the forests in the vicinity of the west coast? Are we to accept the widespread opinion, viz., that it is inferior in species, especially of the endemic order? This question may be decidedly answered in the negative, and I look upon this fact as one of the most important botanical results of the expedition. This forest, with which we became familiar in its most eastern portions, is in no way inferior to the forest of the Cameroons and Gaboon so far as wealth of interesting types is concerned. Bipinde in the Cameroons, distant about

2,000 kilometres from the collecting centre of our expedition in the Ituri forest, is a district particularly rich in endemics, *i.e.*, species which characterise that place. I was therefore all the more surprised on one of my botanical excursions to come across the Bipinde flora *en masse* at the foot of Mount Ruwenzori. It may therefore well be assumed that the forests of the West African Coast and the Equatorial forest are connected, not only geographically, but that botanically they also form one homogeneous whole."



WANGILIMA VILLAGES ON THE ARUWIMI

CHAPTER X

HOMEWARD BOUND

WE left Avakubi on the 27th of April. We had looked forward to the day with pleasurable anticipation as a relief from hot marches through tangled foliage, and a pleasanter mode of travel in large native canoes. The Ituri, foaming over the jagged rocks, rushes wildly through the centre of the village, which is picturesquely built up on the river banks. It loses its tempestuous character further below and flows along sluggishly, under the name Aruwimi, its dark waters forming falls as it nears the valley. There its navigability begins anew, and we found twenty canoes waiting to carry us to the Congo.

After three-quarters of an hour's ride we arrived at Kifuku, our point of embarkation. The rocks there jut far out into the river, and with the dark waters swirling around them form a picturesque feature. The oarsmen bustled about briskly here and there, picking up tents and provisions and stowing them in the boats. A crowd of folk who had followed us out of curiosity loitered round. A few Arabs, the last representatives of that arrogant race which once held sway in Africa, greeted us and handed us gifts of carved ivory. The terrace-shaped banks swarmed with throngs of people, gossiping, chattering, and generally making a bedlam of the place with their hubbub as the flotilla at length set out. The wildest confusion and most deafening din prevailed. All the boats were trying to leave at the same moment, and this caused them to jamb against each other and crush the occupants, who started yelling. Some of the oarsmen who arrived late swung themselves into the first canoe that came handy, and jumped from boat to boat wildly

gesticulating till they found their own. We endeavoured to bring order into the chaos, but our efforts only had a contrary effect. As everyone was shouting at once, nobody could make himself heard. At last the coil was disentangled bit by bit; we were given our course, and, accompanied by the lusty singing of the entire crews, our little fleet sailed out on its voyage. Signalling brief farewells to our friends on the receding shore, we turned our eyes to the front and started on the last stretch of our journey.

The type of boat we used was the common dug-out canoe. The craft were of greater length than usual, however, and in addition to Europeans, boys and Askaris, they bore twenty loads and as many oarsmen, who were posted in the yacht-shaped, cut-away bows. These men were recruited from the Wabudu and Wangilima tribes—fine men, whose splendid display of muscle afforded evidence of perfect training. Their naked bodies shone with grease. They wore caps on their heads made from the long-haired skins of apes, or tightly-fitting bonnets smeared with grease and camwood—something like those used by our ladies at home when bathing.

Bending down low, the *baharia* (rowers) dipped their finely-carved, copper-decorated paddles deep into the water, pulling them out again with a peculiar rapid jerk which made the canoe vibrate a little. The men are excellent, hardy river boatmen, who, with some encouragement, will persevere untiringly for hours at their work. Whilst paddling they usually sing melodiously and with a purity and harmony of tone that I have seldom met with elsewhere.

We all found this agreeable mode of travelling an indescribable relief after our exhausting marches through the primeval forest. Lounging in *dolce far niente* style, stretched on a comfortable chair under the protecting awning, we saw most luxuriant sylvan scenery pass before us in an ever-changing panorama. One might have characterised this kind of voyaging as quite ideal had not the troublesome rapids ever and anon broken the sweet enchantment. Where the river is wide—in some places

it has a width of 1,000 metres—it flows along quietly and lazily, but where its waters are straitened and narrowly confined by islands it shoots impetuously in foaming cataracts.

We ended our first day's trip, which lasted nine hours, at Bosobangi, where there is one of these rapids. At this spot the river has a fall of three metres and becomes a cascade. As the boats had, of course, to pass this, they were emptied, and the natives of Bosobangi, who were familiar with this kind of work, carried the goods, which were heaped up on the bank, round the waterfall by a narrow path. We then took up our stand on a projecting slab of rock and trained our cinematograph on the foaming froth of waters. At a given signal each boat, manned by two men only, approached the chute in turn, and with the speed of an arrow shot down the seething waters.

Thrilling as the spectacle may be, the shooting of the cataracts itself is far from being the most agreeable of sensations, as there is always a danger of capsizing. A slight miscalculation of direction, or a cross-course taken by the boat, may result in catastrophe.

We experienced this on the second day. I was sitting in my canoe at the head of the flotilla, the other boats following at irregular intervals, when we came to another rapid, which we could discern from afar by the white froth on the crests of the waves. On approaching dangerous spots the Wangilima were in the habit of taking an experienced pilot on board from one or other of the many neighbouring villages. As this course was not pursued in the present instance—although the river was at high-water mark—it was a quieting indication that the passage offered no difficulty. We approached nearer and nearer the rapids, and soon heard the rushing of the waters. The singing ceased, the men shipped their oars; their whole duty now consisted in keeping the boat in the fairway. Involuntarily we sat erect and grasped the gunwale with our hands. A slight feeling of uneasiness made itself felt in the epigastric region. We reached the brink of the cascade, the canoe tipped lightly up at the stem and shot with a mad rush through the raging torrent.

Foam and spray splashed up and besprinkled the occupants of the fragile craft. A few moments more and we were through, gliding forward with increased speed for a time, and the danger, of which we only had a vague appreciation, was over. Yet the jabbering of the rowers, which immediately increased in animation, and the sudden lightening up and smiling expression of their faces warned us that their previous apparent tranquillity had only been assumed.

Turning our heads we observed that the second boat had sailed smoothly over the rocky river bed. The third one—Czeczotka's "pirogue"—was just coming up. Its bows had barely touched the line of foam when it suddenly turned obstinately athwart the channel. Recognising the danger, a Congolese Askari sprang up quickly, but a sudden side-jolt of the canoe and—he vanished to rise no more. The next moment the boat had capsized and thrown all its occupants into the water. We were horror-stricken! Any idea of rendering assistance was out of the question, for boat after boat came swishing into the current quite unstably, and each one had quite enough to do in endeavouring to avoid the fate of the luckless craft. It was lying, bottom upwards, jammed in between the rocks, and one boy who emerged from the flood succeeded in grasping its sides and clambering on to the keel. A hand rose up from the water close by—it was that of the non-commissioned officer. The boy, reaching out, grasped it, and on the head following, the brave boy, with a great effort, managed to pull his master up into a place of security. The pressure of the water, however, had loosened the canoe and it went floating down the stream with both of them hanging on to it. One by one the rest of the unfortunates appeared on the surface, some being borne away by the current, others, who had already passed the rocks, making for the banks, whilst some succeeded in saving themselves by clinging on to great stones, where, dripping with water, they awaited their release.

The work of rescue was not an easy one, as the canoes were constantly driven away by the current. At length, how-



A MOBALI (ARUWIMI)

ever, we contrived to throw a line to the poor fellows and managed to draw them into shelter. Five men, alas! were not seen again. The Askari, three Wangilima and a man of the Wabudu tribe had met with their fate. In addition, a great many articles had been lost, amongst them Czeczatka's service rifle and side-arms, his tent, cartridges, and a tin box of writing materials.

After having convinced ourselves that there was nothing further to be done in the way of succouring the victims of the accident, we prepared to continue our journey. Czeczatka was given one of the other boats and I gave him two of my people to help make up the gap in his crew. Another did the same. Then the episode was over and forgotten; the men started chanting their melodious native canoe-songs once more as they paddled tranquilly along the wide expanse of the river, their voices echoing and re-echoing against the dense walls of foliage on the banks.

The singing ceased abruptly. "*Tembo, bana*"—"elephants, master"—shouted the man in the bows as he turned round to me. I jumped up and saw the enormous forms of five elephants bulging out of the water, in which the colossal creatures were standing about half-covered and besplashing themselves in lazy serenity. I seized my rifle and my camera, uncertain what to do. The paddles were dipped very gently, so that no noise might betray our presence. The river was about 600 metres broad at the spot. The approach of the boats appeared to arouse a certain amount of uneasiness amongst the elephants, which was evinced by the raising of their trunks and the flapping of their ears. Creating a tremendous ripple in the stream, they returned to the bank, where there was a young animal who appeared to be in a very aggressive mood, and who was venting his spleen on the boughs of the trees, whilst the others stepped out of their bath and crashed into the forest. The youngster raged around for a time trumpeting, and then, turning in circles in the shallow water near the bank, sucked up the water in his trunk and spurted it into the air. As no danger appeared to

threaten our boat, I dropped my rifle and picked up my camera. Just then the ill-natured beast took his departure!

Our river journey had been very poor in respect of fauna. Besides the few elephants we had only seen one or two crocodiles. Flights of grey parrots had frequently passed over our heads, but the trees seemed almost lifeless. The interior of the forest is alive with animal life during the daytime; it is only at night and in the early morning hours that the river banks show signs of life, and after the animals have drunk their fill they retire again into the shady shelter of the thickets.

We reached the "Awake" rapids at three o'clock in the afternoon. This place certainly has a name, but possesses no houses, so we set up our tents in the forest close to the water's edge, whence we could enjoy a splendid view of the rapids, which stretched the whole width of the river. We were very glad to finish the day's journey, as the air on the water was most sultry and oppressive.

In the evening immense hosts of flying foxes flew circling over our camp. Uncertain as to whether they were identical with the Kwidschwi species, we brought down a few with our rifles. We were very much surprised to see that generally two fell to the ground together, instead of the one hit only, and on falling became detached. They were love pairs, who were probably whispering tender caresses into each other's big ears during their aerial flight. We found them to be identical with the Kwidschwi species.

At Bomili we learned what a well-kept European station of considerable dimensions was like. Pretty, whitewashed houses stretched out invitingly along the gently sloping river banks before the eyes of the weary traveller. Just opposite to them the Nepoko flows out from the green forest and joins the Aruwimi, which here forms a rushing cataract. As we were emerging from the Zone de l'Haut Ituri to enter the Zone de Falls, our amiable travelling companion, Commandant Engh, turned back for Avakubi with his rowers. A Norwegian by birth, Engh is one of the most striking personalities in the whole



FALLS OF THE ARUWIMI AT PANGA



WAR AND SIGNALLING DRUM OF THE ARUWIMI NATIVES

Congo State. His expressive face and the narrow lips betray that his lean person is dominated by a power of will out of the common, which, in conjunction with tact and shrewd diplomacy, has had a most beneficial effect on the natives. The Belgian Government has placed the right man in the right place. For the Zone de l'Haut Ituri comprises the great rubber reserve, where, as I have elsewhere mentioned, the native question is a specially difficult one, and the administration therefore carries with it great responsibility.

Our new crews showed themselves equally as experienced as the previous oarsmen, and knew how to navigate skilfully the long-drawn rapids at Kalagwa, which we had to pass on the 1st of May. As the river winds between islands abounding in craggy rocks at this spot, the current was more than usually strong and was considered very dangerous. Every boat therefore took one or two pilots from the neighbouring Mobali villages, who were intimately acquainted with the peculiarities of the stream. Sitting in the bows, these men would indicate the exact course with their hands, and the trusty crew endeavoured to guide the canoe into the sole navigable channel with their long poles. Most of the boats negotiated the three hours' passage through the seething froth in safety, but Wiese's, Schubotz's, and Mildbraed's barks were in considerable peril. Although the prophecy that we should have to anticipate losing at least one boat at this spot was happily left unfulfilled, it was only after a long and severe struggle that we were enabled to free the canoes from danger.

When we arrived at Djambi we had to elude the cataracts by making a detour on land. We came upon huts for the first time which differed entirely from the usual kind. The Wangilima, the ruling tribe in these parts, cover their rough huts with pointed, pyramidal roofs of broad leaves and brushwood. The natives told us that this covering is the only protection they are afforded against the driving rains in the wet season. This style of architecture appears only at intervals, and after another two days' journey the ordinary form of hut resumed sway. On

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entering the village we were startled by the appearance of an ape in human form, or vice versa. This apparition resolved itself before long into the headman of the village. In order to increase his charms, the fellow had daubed the whole of his body a fiery scarlet with powdered camwood.

We came to the most imposing cataract when we reached Panga. These falls have a huge drop, and the roar of the boiling waters may be heard from afar. The cascades, divided only by detached, brush-covered rocky masses, extend the whole breadth of the river and present a magnificently picturesque subject for a painter's brush when seen in the light of the setting sun. We did our best to secure a photographic souvenir. As these cataracts are said to be impassable we changed our boats and our crews. Having bidden farewell to my beautiful canoe, which had borne me safely in spite of a leak, I was all the more pleasantly surprised to see it again, and in good condition, amongst the new craft. The men had succeeded in taking it through the raging torrent on long liane from the bank.

There is an island which lies in front of the waterfalls on which Mr. Hannam, the discoverer of nearly all the valuable mines in the Congo State, lives. This famous prospector had also found conglomerate gold in that spot, which justified the highest hopes and indicated a possibility of profitable working. Two of his agents were prospecting farther down the river, and apparently were equally successful. These finds gave further witness of the wealth which was lying around in the soil and not being turned to account. Mr. Hannam, whose frank and simple manner charms everyone, is, as may be easily understood, one of the most popular men in the State. Equipped with a very considerable amount of expert knowledge, gained in the most important mining centres of the globe, the Congo State has taken him into its service, and certainly not to its own detriment. For it was due to him that the abundant wealth of copper and gold at Katanga was discovered, and it was on his advice that the active and prosperous industry at Kilo was



A MOBALI (ARUWIMI)



**A VILLAGE HEAD MAN OF DJAMBI
(ARUWIMI)**

initiated. Thanks to his shrewdness, a whole number of smaller metal deposits have also been turned to advantage. The State shows its gratitude by giving him a salary which should satisfy the highest demands, as well as his full maintenance whilst in Africa. As this is over and above adequate for the upkeep of a whole family, a visit to Mr. Hannam is much prized, for no one ever leaves his small island without having gifts bestowed upon him. We, too, experienced his noted hospitality, and when we reached Mupele, after another seven hours' journey, our glasses, filled with Hannam's champagne, toasted the health of the genial donor.

Yet another incident heightened our pleasure in tasting the exhilarating beverage we had not seen for months, and that was our first meeting with a European lady for a twelvemonth! We met five boats in the centre of the stream, which flowed along almost imperceptibly. Under the awning of the first we saw the fresh young face of the wife of the *Chef de secteur*, Madame Milies, who for years has shared life and fate with her spouse in the interior of Africa. Although the animated conversation carried on from boat to boat was only of short duration, we were strangely moved at the chance meeting. It was like a greeting from far-off civilisation.

The next day was very cool, and a dense mist obscured all view. We had a trip of eight hours, during which the sun finally conquered the fog and began to shoot down its scorching rays in a fashion that made us welcome the sight of the Banalia encampment. On the journey we had come across several elephants standing in the stream, and one of them swam the whole breadth of the river in front of our boats. On a similar occasion I was successful in killing an elephant from the boat.

It was delightful to be able to stretch our stiff limbs again after sitting so long on the inflexible seats. There are rapids in front of the station, but they have not much volume of water, and there are shell banks on the bed of the river. Plenty of young women go in for fishing there; they remain under water for several minutes, scraping the shells from the banks. The

shells are made into ornaments; the fish are similar to oysters, and form a favourite article of food.

We reached Yambuya by way of Bakanga and the Bogbodet rapids on the afternoon of the 8th of May, and were at the end of our "romantic" journey by native boat. There we learnt that an early steamer was coming to pick us up and carry us to Basoko.

But our last day in the canoes was not destined to pass without accident. The boat occupied by my servant Weidemann (our general factotum in every sense of the word) filled with water in consequence of the stern striking a submerged rock, and lay on its beam ends. The occupants were thrown into the rushing stream, and as this boat happened to be the last of the procession the catastrophe remained unobserved, and it was a long time before the natives of the neighbouring village decided to assist the unfortunates, who were shouting and wildly signalling for help. The canoe was got to the bank, fortunately undamaged, but, sad to say, a number of stores, cartridges and letters, as well as a thousand photographic plates, were irrevocably lost.

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Yambuya, as well as Basoko, played an important part as a base on Stanley's memorable expedition to Emin Pasha's relief, and the boundaries of the old encampment are still recognisable. Directly opposite was the anchorage berth of the *Délivrance*, which we were anxiously expecting. When her shrill whistle at length broke the stillness of the river valley, we all rushed to the shore in eager excitement to feast our eyes on the sight of a regular steamer.

The *Délivrance* belongs to the smallest type of Congo steamer. She is furnished with a large stern-wheel, a deck lying almost level with the surface of the water, and an upper deck. The latter would be a splendid domicile were it not for the wood ashes which escape from the funnel and rain down to burn holes in your clothes. So we joined our Danish captain and made ourselves comfortable on the bridge, which was one

and a half metres wide and three metres long. The captain's is the only cabin.

I paid a visit to the great liane plantation of Patalongo, in company with Dr. Mildbraed and M. Lemoine, *Chef de poste*, a very droll, sociable fellow. So far as I am aware, it is the only settlement where liane alone are cultivated. When I was there there were as many as 320,000 *Landolphia* and 200,000 *Clitandra* seedlings on 800 *ha* of ground. The plantations are partly situated in the clearings of the forest itself, and partly in places which have been specially grubbed out; the latter, which admit the full influence of the sun, appear to be the better adapted to the purpose. It is to be regretted that here, too, the full development of the plantation is hindered in consequence of the lack of permanent labour. Only the most skilful hands can be utilised for the work, and the State engages each man in most cases for a period of twelve months.

The slow growth of the liane—which permit of no tapping till they have been planted for twenty years—deals a death-blow even to such a fine plantation as the one mentioned. In consequence of the huge pecuniary outlay and lack of advantageous return, the State has been forced to cease further attempts in this direction, and to content itself with the cultivation of the rubber tree.

Meanwhile, all our loads had been stowed on board the *Délivrance*, and we weighed anchor in the afternoon of the 10th of May. Soon the revolutions of the great stern-wheel were driving us along the Aruwimi with an easy celerity to which we had long been strangers. After a few hours of rapid journeying, in the course of which we had to steer a very zig-zag course in consequence of the frequent sandbanks, we anchored at Mogandju and passed the night there, after a very entertaining evening in the society of some very pleasant Belgian gentlemen.

Mogandju is the best-kept station on the whole length of the Aruwimi. It is surrounded by extensive coffee and cocoa plantations, and rubber trees are also cultivated. Attempts have

been made to grow cotton plants. It would be premature to pass any final judgment as to their ultimate chance of prospering, but the healthy appearance of the plantation indicated that the soil, at least, was promising.

After hearty farewells we proceeded on our course, accompanied by the retiring *Chef de poste* at Mogandju, M. Bisteau, who was going home on furlough on finishing his "terme." The whole village, with all the head-men, had hurried up to view his departure, and one read genuine sorrow in their faces at having to lose their kind and honoured master. They pressed around him, stretching out their hands and entreating him to return to them, and as long as we could see them from the steamer they kept on waving adieux. The feeling they exhibited was really genuine and a sign of the firmly cemented mutual interest existing between superior and subordinates.

Tranquil and unconcerned, we enjoyed the beautiful passage, until a violent shock made the ship tremble and took us for a moment out of our course. We had run with full force against a sunken reef falsely marked on the chart, or not marked at all, and the water was pouring with irresistible force through a great leak on the port side into the hold where our baggage was lying. Although the crew bailed continuously they could not keep pace with the constant stream of water; the bow sank deeper and deeper and the vessel threatened to sink. Nothing remained but to beach the ship. We steamed with full power against the brushwood on the northern bank. In vain! The *Délivrance* recoiled like a ball from the boughs, oscillating violently. "Full steam astern, hard a-port, and full steam ahead across the river!" came the orders, which were executed with admirable coolness. Then we saw the flat shore of a village on the further bank. To lessen the top-weight we all descended to the lower deck, which was nearly submerged. We exerted the engines to their uttermost and steered straight for the bank—still fifty yards, thirty, ten, and then a terrible crash! The steamer lurched heavily over, righted herself and rode firm. A hurrah of relief escaped our throats. Our brave boys, however,



A CONGO STERN-WHEEL STEAMER



A PLANTATION AT BARUMBU, CONGO

had not waited for the usual style of landing, but had sprung overboard pell-mell.

After the vessel had been emptied of all goods and luggage, the necessary repairs were begun. Not until sunset were we able to continue our interrupted voyage. We did not regret the halt, however, for dusk was just settling down in the virgin forest and stillness reigned, uplifting our spirits in an atmosphere of calm serenity. From behind the clouds the gleaming disc of the moon emerged in all its silvery splendour and disseminated that indescribable tropical charm over the surrounding scenery which calls up such an unconquerable yearning in the heart of a lover of nature. That feeling, which, in spite of all dangers and hardships, always draws him again to the vast mysterious territory of unexplored Africa. We sat mute on the deck, deeply stirred by the fairy-like scene.

After some hours a glimmer of light appeared in the far distance, then a second, then several. We were nearing our destination. Lying alongside the quay close to the outer wall of Basoko, we could discern the outlines of a large steamer. It was the *Flandre*, which was going to bear us down the Congo. We approached at half-speed. Orders were given. "Stop her! Back her!" and we made fast alongside. The officials of the station were waiting to greet us with the Commissaire général, Commandant van Vert, at their head. When, accompanied by him, we trod the wide streets of Basoko, we almost fancied we had returned to European civilisation again. And when later, for the first time for a twelvemonth, we lay in comfortable European beds and ran over the events of the past year in our minds, we were able to close our eyes in slumber with a feeling of perfect contentment. All troubles and dangers had been happily surmounted. The voyage in front of us on the Congo was only child's play. The work of the expedition was finished.

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Basoko is one of the largest and most important stations on the Upper Congo. It is an old fortified encampment of Stanley's, which has played a considerable part in the history

of the Congo State, especially at the time of the Arab rising. The fort consists of towers and walls provided with loopholes, extending along the Aruwimi. This extensive post comprises a considerable number of European dwelling-houses, magazines, barracks, a hospital and a prison. Broad, shady avenues of well-kept mango trees give the place a pleasant, homely look. The Commissaire général, who commanded the Aruwimi district at the time, escorted us round and pointed out the fruits of his and his predecessors' work.

We took the opportunity to examine one of the larger store-sheds. It was filled with cases of all sizes containing the multifarious articles with which the State pays its workers. Whole shiploads of stuffs, wire and beads, lay heaped up together with mountains of straw hats, leather belts and other European articles in bulk, which probably sprang from some Brussels or Antwerp bazaar. Ready money is not used in the Upper Congo. The State pays for its labour in kind, fixing the value itself, and in this way satisfies at the same time all civilised wants felt by the natives.

Basoko bears a bad reputation on account of its climate. Malaria, black-water fever, and dysentery have been fatal to many Europeans. They found a last quiet resting-place in the cemetery on the western side of the station under the shadow of the palms and the mango trees. A long row of cairns, constructed of bricks and lime, bear the name and date of death of those buried there. Formerly hardly a year went by without one or two names being added to the list of those who had passed away. Matters are improved to-day. The progress made in tropical medicine, the most brilliant success of which has been prophylactic quinine, has robbed malaria, and with it black-water fever, of a good many of its terrors, and dysentery has decreased with a more accurate knowledge of its causes. Yet, in spite of all, these illnesses are always the greatest dangers connected with a sojourn in the tropics.

I may, perhaps, in this space be permitted a brief word as to the state of health of the members of the expedition. Ex-



A MAN OF BASOKO



CONGO STEAMERS

cepting the misfortunes that overtook Raven and Weiss, scarcely one fell seriously ill—that is, sufficiently so to be confined to bed for any time. Slight attacks of malaria, dysentery and fever occurred at times, but were of an entirely harmless nature. I, personally, escaped all sickness. The only one who suffered a violent malarial crisis was Sergeant Czczatka. In his case the fever assumed a very threatening character. He, however, was also the only one who, as he himself confessed, did not keep strictly to the Koch malaria prophylactic, as we had done, viz., one gramme every seventh and eighth day.

We had to devote our two days' stay at Basoko entirely to the wearisome work of packing. Our special investigation work was concluded, and all our apparatus and the latest collections we had acquired during the journey down the Aruwimi had to be packed in such a way that they could be confided with an easy mind to the hold of the *Flandre*, and then consigned to a forwarding agent at Leopoldville for transshipment to Europe. When the last chest had been securely nailed down and duly marked, and had vanished into the bowels of the *Flandre* we all breathed freely once more, and had a feeling of holiday gaiety when we stepped aboard the ship, which awaited our departure on the 14th of May.

The *Flandre* is not a particularly fine vessel externally, any more than the other steamers which navigate the upper Congo. She is similar in type to the *Délivrance*, but is far larger, and is driven by two stern-wheels. Suitability for the work required was made the sole consideration in constructing all the steamers. The difficult conditions ruling the waters of the Congo, the numerous shoals which shift from time to time, etc., have to be taken into account, so that the boats are given the smallest draught possible. Thus in order that the cubic space may not be diminished, a proportionate breadth and a high superstructure have to be allowed. The resultant structure has not anything very shiplike about it. The comfort and convenience of the interior arrangements, however, soon reconciled us to a lack of mere external finish. These vessels have two superposed decks,

the lower serving partly as a cargo hold and partly as quarters for the black passengers and crew. On the upper level there is accommodation for Europeans. There are about sixteen cabins amidships, arranged in two rows, with their doors and ports opening on to the promenade deck, a passage way of about one and a half metres width encircling the whole vessel. We took our meals in a spacious part of the foreship, behind the captain's cabin, where there was a full passage for the air, and protection from the rain in the shape of curtains which could be let down. Taken all in all, the *Flandre* greatly surpassed our expectations with regard to the comfort of a Congo steamer. Our feeling of gratitude was still further increased by the kindness of the Government in having placed the steamer exclusively at our disposal. Thus, excepting ourselves, there were only four Belgians who had accepted my offer of a passage and had come aboard with us.

Basoko is one kilometre distant from the confluence of the Congo and the Aruwimi. So we still awaited the great moment when we should gaze on the mightiest river of the continent, yet the actual sight of it was far less impressive to us than it seemed to have been to the earlier trans-African travellers Stanley and Count Götzen. Our fourteen days' passage down the Aruwimi had accustomed us to the sight of huge expanses of water, so that, naturally, we could scarcely be seized with the same feelings that filled our predecessors at the sight of the Congo after their long years of hardship, privation, famine and danger. Thus, we hardly noticed the Congo, or any particular difference between the familiar picture of the lower Aruwimi and this new stream, which did not appear much broader. The reason of this lies mainly in the fact that during our entire Congo passage we never received the full impression of its immense breadth and might, although at its widest spot it exceeds thirty kilometres, for countless islands, sometimes a mile in length, succeed one another in an almost unbroken chain and obstruct the view.

The district chief at Basoko had recommended us to inspect

the Barumbu plantation, which lay only an hour away by steamer, and very kindly escorted us. This big plantation lies close to the river bank, and on it are grown cocoa, coffee, rubber, and cotton. The cultivation of the two last-named is in its infancy, but the other two are already producing excellent results. The cocoa harvest, for instance, amounted to thirty-four tons for the four months preceding our arrival. The higher officials of Basoko possess a kind of Tusculanum in Barumbu, a stately, spacious house beautifully situated on a hill in the centre of palm groves and blooming gardens, from which a wonderful view of the river framed by the primeval forest is obtained.

Without doubt there are more interesting journeys in Africa than a voyage on the Congo. For instance, it is not so full of diversity or so absorbing as travelling on the Uganda Railway. Yet it would be unjust to condemn it as being devoid of charm, as the Congo officials do. We enjoyed the agreeable and new experience of sitting at table and having the forests and villages passing before our eyes as if we were present at a panoramic performance. Considerable demands are made upon the captain during this trip. With straining eyes he has to "read" the water, that is to say he has to look out for the least curling or roughening of the surface which betray the presence of shoals, and avoid them by constant zigzagging. He dare not leave his post forward on the upper deck during the course of the voyage. Behind him a reliable black takes the helm, and on the lower deck, under the incessant scrutiny of the captain are two other darkies who measure the varying depth of the water with two long poles. It is no uncommon event, however, for a steamer to run aground, in which case it may have days or weeks to wait until it can be floated with the assistance of another vessel. We were mercifully spared that misfortune, thanks to the captain and the high level of the water. Of course we only steamed by daylight; at night we anchored anywhere, if possible at some village. These halting places serve at the same time as depots for wood, which is used exclusively for firing in consequence of the lack of coal. The supplementing of these wood stores is a business which is

left entirely in the hands of the natives. One load does not suffice for the daily consumption of a 150-ton steamer of the *Flandre* type. Our fuel had to be replenished more than once during the course of the day. Fortunately the banks of the Congo are well timbered, and there is wood in abundance. The forest region ceases just before the Kasai estuary and steppe country takes its place. We often peered through our glasses in the hope of espying game of some sort, and in fact we occasionally discerned medium sized red antelopes, and once the great head of an elephant who was dreamily flapping his enormous ears. The river fauna, too, grew more abundant. Thus far we had not met with any crocodiles or hippopotami on the Congo. We met them now in rich abundance. The river was animated with pelicans, flamingoes, and screaming sea-eagles; it was quite amusing to see the crocodiles lying lazily stretched on the bare yellow bank apparently in happy family union with the long-shanked flamingoes and pelicans. They appeared entirely indifferent to the passing steamer.

Up to the present, traffic on the upper Congo and on the lower reaches of its great tributaries has been maintained exclusively by the Congo Free State steamers. Any private vessels belonging to privileged trading companies, or the scattered mission stations, cannot at present be taken into consideration. There are about forty-five steamers in the fleet, varying from about thirty-five to five hundred tons each. Three of the largest are used for cargo traffic entirely. The second larger type, like our *Flandre* and two sister ships, have a tonnage of one hundred and fifty tons, and are intended mainly for passenger traffic. There are other types and sizes also down to thirty-five tons. The steamers leave Stanleyville and Leopoldville every fourteen days, the larger type alternating with the smaller. The journey from Leopoldville to Stanleyville is accomplished in about three weeks according to time-table. In the reverse direction, down stream, about fourteen days are requisite. We took only eleven days, having no cargo to load at any point.

During the course of our trip we frequently passed boats which

were not so well equipped as the *Flandre*. As the State looks upon economy as of more importance than celerity in the despatch of its goods and its agents, and there is not much room to spare in the small steamers, a small craft in the shape of a lighter or barge is sometimes attached alongside the vessels. We saw one of these a few days out from Basoko. There were twelve passengers, *agents d'État*, on board, and only nine available berths. Three of them had to camp on the deck, which was not any too spacious.

Military stations on the upper Congo are so numerous that we arrived at one daily, and we always met with a most cordial reception. One day we anchored at Lisala, one of the great depots for troops of which I have made mention in another place. This large encampment occupies an elevated position on the right bank of the Congo and commands a beautiful view of the broad river and its maze of islands.

Soon after leaving Lisala we passed the spot where, only a short time previously, the *Ville de Bruges*, a thirty-five-ton steamer, had been thrown on her beam ends by a hurricane which had swept up the stream with terrific force. Nearly all on board lost their lives, including six whites. Some of the Europeans succeeded in swimming to the banks, but were killed by the natives who had flocked to the scene in the hopes of wreckage, and fell victims to cannibalism. Only one white escaped, a Finn, and, clinging to a plank, he was swept down the stream. Two days later he was found on an uninhabited island, half crazy with hunger and the perils through which he had passed. Unfortunately the poor wretch understood no language but his own. Thus the sole living witness of the catastrophe was unable to give any account of it whatever. The wheel-house of this ill-fated vessel still projected from the water, a dumb token of the sad accident and a forcible reminder that even a harmless-seeming trip on the Congo has its dangers.

We, too, had our share of bad weather during the voyage. It vented itself in torrential rains and tropical thunderstorms, which burst down upon us from a serene sky with such force

that the banks of the river were completely obscured by the rain. At these times the captain had no means of keeping his course, and we had to anchor immediately. Where a strong wind accompanied these downpours we endeavoured to find some tolerably sheltered spot near the banks, where we often stayed for hours until the weather cleared. Heavy morning mists, too, frequently delayed us in starting.

We arrived at Nouvelle Anvers, which is one of the largest stations of the interior, and officered by fifteen white men, on the 17th of May. Its numerous substantially built structures give an excellent impression. The mission church really amazes one by its size and its dignified beauty, and is an excellent example of the building powers possessed by the negroes when under proper European control. The station is situated in the centre of a district that is visited heavily by sleeping sickness. This is a fact borne witness to by a hundred patients who were lying in the local hospital undergoing the atoxyl treatment. The State, as I have previously mentioned, is fully alive to the terrible danger of this plague, which is spreading more and more in the Upper Congo, and spares no efforts in combating it. In the big hospital laboratory at Leopoldville the origin and treatment of this dire disease forms a subject of most serious scientific study, but, so far, no positive and lasting success has resulted.

Coquilhatville, our next stopping place, is the terminus of the telegraphic connection with the coast. It is a very attractive looking spot and lies in the midst of beautiful horticultural gardens. The Commissaire Royal, M. Henry, a special ambassador from the sovereign, was stopping there. He was travelling under supreme commission of State to examine into the conditions of the stations and the state of the natives, and was to report later direct to His Majesty. These visits, which are repeated at intervals, prove beyond doubt that the Government is actuated by the best of motives, and does all in its power to protect the natives from any injustices.

Twenty minutes' steaming sufficed to bring us to Eala, the

botanical experimental garden, which we had the pleasure of inspecting in the company of its director. It serves scientific and practical aims jointly. Amongst its numerous products may be mentioned rubber, gutta-percha, cocoa, tea, vanilla, coca, patchouli, and other articles. It was a visit of especial interest for our botanist, and a pleasure to us laymen to see amongst the thousands of plants the producers of such old and familiar articles of common household use as tea, vanilla, and, if you like, patchouli.

Next day we reached Irebu, a great military depot. Eight hundred black soldiers were being drilled into shape at the time of our visit. We had the pleasure there, long denied us, of dining in the company of a lady, Madame Jeuniaux, wife of the Commander of the military depot. After dinner we had a regular concert—songs with harmonium accompaniment. It quite stirred us to hear German songs sung in a very pretty voice by a lady, especially after having had nothing better in the way of music than our hoarse old gramophone for a year.

On the following morning we left on our four days' voyage to Leopoldville, the terminus of our steamer journey. These passed quickly, as the scenery was always changing. We only passed small posts at this part of the Congo, the duty of whose occupants is to look after the maintenance of the telegraphic connection. This duty is a very severe one, for the lines to be controlled are of great length and extend over many miles of fever-laden swamps. The officials are constantly compelled to take exhausting journeys in order to repair the damages inflicted by the elephants, or otherwise.

After passing the mouth of the Kasai, one of the largest tributaries of the Congo, we crossed Stanley Pool on the 24th, a great water basin of two hundred square kilometres. Heavy fog lay on the water and forced us to anchor again. When the sun's rays at last pierced the vapour, the white houses of Brazzaville were gleaming in the distance from the northern shore, and those of Leopoldville from the southern. Not wishing to miss the opportunity of seeing the capital of a French colony, I had

communicated the day before with the Governor of the French Congo, who resides at Brazzaville. As seen from the river, the town lies prettily situated on the high banks, which are thickly covered with trees and gardens. A trim, winding road leads up from the river to the fine Government residence, which is surrounded by beautiful verdant grounds, and whither we were conducted by two officials, who had been specially sent to receive us. After having been presented to the various assembled officials, we set out on a brief tour of inspection of the hospitals, schools, barracks, and other buildings, which made a very favourable impression on us as regards French colonial work. As time pressed, we departed from Brazzaville after a three hours' stay, and a quick trip across the pool landed us in Leopoldville at noon.

The importance of this point as the starting port of the shipping to the Upper Congo, as the central trading place for the interior and the seat of the higher administrative authorities, is indicated by its immense extension along the southern bank of the Pool. The quay was alive with traffic and the harbour was crowded with Congo steamers of all sizes. Some were laid up for cleaning and repairs. Steamers are put together here from iron plates made in Europe, and then launched. Close to the quay lies the railway terminus of the Matadi-Leopoldville Railway. The district chief and the commandant of the garrison came along to welcome the *Flandre*, and handed us letters and newspapers from Europe, an event which always gave us pleasure. In the afternoon we went for a walk through the town, and were very much struck by the large number of factories, which appeared to be in a flourishing condition. During our journey through the Congo State we had, so far, not come into contact with any private enterprises. The State is the only commercial agency in so far as the native demand is concerned, which deals with the bartering in stuffs, beads, etc. The streets and houses in Leopoldville are clean and attractive in every way. Sleeping sickness forms a subject of the most vital interest; only a short time ago cases of trypanosomiasis were almost unknown amongst



ATMOSPHERIC ACTION ON QUARTZ ROCKS



MATADI

the white men. Unfortunately, they have increased, and the chief physician of Leopoldville assured me that very few months pass without some European, smitten with the fell disease, being brought into hospital.

We were most courteously treated by the authorities, who had kindly placed an express train consisting of three carriages at our disposal to take us from Leopoldville to Matadi. In order to break the journey of 480 kilometres, we spent the night at Thysville, about half-way, in an excellent hotel belonging to the railway company. The port lies 740 metres above sea level and nearly 500 metres higher than Leopoldville, and the pleasant, cool climate it enjoys makes it a favourite resting place for weary travellers coming from both directions. Leaving early next morning, we travelled along a track of railway which is admirably and skilfully laid out. Although no tunnels have had to be made, and very few bridges were necessary, many other difficult obstacles have had to be surmounted. The embankment all along the line is in first-class order. All the employees, including engine-drivers, inspectors, and repairers of the line, are blacks, who carry out their duties with all the skill and adroitness of Europeans. The track has a pretty sharp descending gradient a little way before reaching Matadi. It crosses several rushing mountain streams and deep ravines, and winds around steep slopes. Three or four serpentine tracks followed close on each other and reminded us of certain venturesome Alpine mountain railways.

At the last station before reaching Matadi the line bridges the Mposo, an important affluent of the Congo, which rushes past deep down in the valley, and immediately after passing it we caught sight of the latter majestic river once more, which we had not seen since leaving Leopoldville. Framed in by lofty mountains, the broad and mighty stream tears onward to the sea. On arriving at 5.30 in the afternoon, we found a considerable number of Europeans waiting on the station platform, partly to greet us and partly for the ordinary scheduled train, due shortly after ours. We were received by the Vice-Consul, Herr Schmidt,

and by the Commandant at Matadi, and shown to our quarters, enjoying some very pretty views of the town and harbour on the way. Matadi is a place of considerable importance, as it is virtually the seaport town for the whole of the Congo State. Ocean-going steamers are able to navigate the stream up to this point. Numerous Government and private buildings reach from the harbour to fairly high up on the hills. All the buildings are constructed of iron and corrugated iron, and consequently lacked the cheerful appearance of the stations we had been accustomed to meet on the Upper Congo. The town does not bear a very good reputation on account of the great heat which prevails, the mountains around shutting out all fresh breezes. The place seemed better than its repute to us, probably because we had grown accustomed to high temperatures. Two vessels were lying in the harbour—the *Albertville*, a 4,000-ton steamer belonging to the Compagnie Belge Maritime du Congo, which plies every week between Antwerp and Matadi, and the Governor-General's yacht *Hirondelle*, which was to carry us to Boma next day. During our rest at Vice-Consul Schmidt's hospitable house we learned that within a few days' time we should be able to leave Boma by the English steamer *Mandingo*, of the Elder Dempster line, which runs to the Cameroons.

Next morning the smart little *Hirondelle* took us to Boma in two and a half hours. The Governor, M. Fuchs, was unfortunately confined to his room by indisposition, but he had asked his secretary and the *Commandant de force publique* kindly to meet us at the landing jetty. We forgathered later at the Governor's residence. He has lived for fifteen years on the Congo, and, having traversed the whole territory through and through in the course of years, has become one of the foremost living authorities on the subject. In consequence of his excellent personal qualities, his courtesy, kindness, and great experience, he is held in very high esteem, and we shall not soon forget the pleasant hours we passed in his house.

Boma lies in the midst of green gardens and shady avenues.

The hospital, the official and the private buildings lie a little distance away from the river; the city proper, the commercial part, the factories and the negro quarters extend along the bank. A steam tramway, on which officials are allowed a free pass, connects both parts. An experienced guide accompanied us on a tour of inspection of the chief buildings and their internal arrangements: the native hospital, which is built in conformity with all modern hygienic ideas, the barracks, the school, the prison, etc. The latter contains a separate part intended for white men, which consists of thirty single cells of equal size and a common mess-room. This arrangement has proved to be necessary in case it should happen that twenty Europeans should be simultaneously expiating their offences, which for the most part consist in the oppression of the natives. Everything we saw in Boma pointed to practical experience and exemplary method. As we promenaded through the *jardin publique* next day (Ascension Day) at the hour when the *élite* of Boma was wont to air itself, we listened to the strains of a negro band and enjoyed hearing many a familiar tune again.

In the meantime the captain of the *Mandingo* had telegraphed from Loanda announcing that he would arrive at the mouth of the Congo at noon on the 29th of May. We were to be taken there by the *Wall*, a small Congo State steamer which plies between Boma and Matadi. The Governor and other gentlemen courteously saw us aboard the *Wall*, and in glorious weather, with hearts rejoicing, we steamed to the open sea, which we had not seen for a year.

Sunk in thought, we gradually approached the mouth of the Congo, hardly observing the gradual receding of the river banks and the slowly changing colour of the water, till our attention was aroused to the proximity of the ocean by freshening breezes and an increased pitching of the boat. Then, having drawn abreast of the large islands which lie in the channel and obstruct the view, we saw the ocean at last, stretching blue and limitless before us. The waves were glittering in the sunlight as if they were spangled with gold, and their crests were curling with

foam. A small black cloud on the horizon indicated the approach of the *Mandingo*.

We were soon alongside the fine vessel, just as she was letting her anchor drop. In a rolling sea the *Mandingo* took us and our impedimenta aboard, and, weighing anchor again, stood out towards the north. The *Wall* dipped her flag in a farewell salute whilst the flag of my native country was hoisted at our peak.

We stayed a brief period at the Cameroons, and paid a day's visit to Lome, the capital of Togo, but the expedition's exploration work was completed. Time will never efface the impressions we had received. We had roamed over sun-scorched steppes and through boundless primeval forests; passed over four immense lakes and snow-capped mountains, and had gathered a rich store of memorable experiences indeed. We were returning home buoyed up with the knowledge of having done our duty, and having assisted, as far as in us lay, in the unravelling of many important scientific problems.

CHAPTER XI

RESULTS OF THE EXPEDITION

IN the spring of 1909, at the opening of the exhibition in the Zoological Gardens at Berlin, which was intended to afford all those interested in colonial and scientific matters a preliminary survey of the results of the expedition, exclamations of surprise could frequently be heard escaping the lips of learned men in respect of the great extent and remarkable variety of the exhibits. Few of those present had, up to that moment, harboured the remotest idea that our expedition would bring back such a notable mass of interesting scientific material as a result of its twelve months' exploration work. Yet the exhibition building only contained a comparatively insignificant proportion of the collections sent from Africa. The limited space at our disposal had to be taken into consideration, and it was also adjudged wise to present merely a characteristic selection to the public, which would not fatigue the eye.

In any case, the interesting botanical specimens, the maps and charts carefully drawn up by the aid of the photo-theodolite, the geognostic samples, the innumerable exhibits in spirits, the hides and skulls, and, certainly not least, the rich ethnographical collections, with the numerous pictures of peoples and places, all served to convince expert and experienced judges that every member of the expedition had done all in his power to fulfil his own particular duty. In one word, the expedition had *worked*.

I will now give a brief summary of the main outcome of our labours, more especially for the benefit of those who may not have an opportunity of perusing the scientific volumes which

are to follow this narrative. Any final judgment concerning the value of the scientific results attained by the expedition will not be possible yet for a considerable time.

As regards topography: the so-called "white spot," *i.e.* the territory north of Mpororo, between the Kagera and the Kagitumbe, was thoroughly surveyed in two plane table surveys on a scale of 1:100,000, with an area of 2,700 square kilometres. Further, the volcanic region beginning at the northern point of Lake Kiwu, nearly up to the 30th degree of longitude, was surveyed on a scale of 1:100,000, with an area of 2,500 square kilometres. One hundred and thirty stereographic views were taken of fifty-one theodolite stations, which were computed later by the stereo-comparator, and which have yielded a positive groundwork for the survey of the country. Observations of altitude were taken at three hundred and fifty various points by means of the barometer and the thermometer. After finishing the plane table surveys, attention was devoted to the road surveys, which were revised and amplified by means of the photo-theodolite and by astronomical observations. This work went on without intermission; when our topographer fell ill it was still supervised by him from his invalid hammock. Longitudinal, latitudinal and time computations were made with the assistance of eight chronometers. Magnetic observations were taken at fourteen stations with deviation, magnetometer and standard compass. Two maps covering an area of 8,670 square kilometres have now been completed and are ready for the printer.

Our geological investigations in the north-western part of German East Africa, especially the geological cartographical survey of the "white spot," went hand in hand with the topographical work. Working conjointly, our geologist and topographer succeeded in making a geological profile chart of Bukoba right through Karagwe and Ruanda to Kissenji on Lake Kiwu. Close attention was given to the contingent possibility of useful minerals being discovered. Search made in this direction led to the finding of veins of iron ore in the quartzites. Further,

valuable material was gained for the observation and diffusion of ferruginous conglomerates, which up till then had been erroneously termed bog-iron-ore. Bornhardt in his fundamental work on the surface configuration and the geology of German East Africa had already suggested that this mineral species is by no means identical with our swamp-ore, but he wrongly connected its origin with the underground water. Time was also devoted to the study of the various forms of atmospheric disintegration which were encountered; also to the hot springs of Mtagata in Karagwe, Irungatscho and Maji ja moto. During Kirschstein's stay of half a year in the volcanic and lake territory he explored the Virunga volcanoes to the north of Lake Kiwu with regard to their formation, the eruptive effects of their magma, their subsoil and their tectonic relations. Investigations which were made respecting the earlier water-level and extent of Lake Kiwu and Lake Albert Edward, and especially as to their origin and mutual relations, finally led to the conclusion, supported by geological and palæontological remains, that these two lakes formed a common water-basin before the birth of the volcanoes, which stretched out 45 kilometres northward beyond the present-day northern shores of Lake Albert Edward. Altogether twenty-eight loads of stone and rock were collected. Seventeen of these fall to the share of the volcanic territory; the north-western portion of German East Africa accounts for five (west shore of Lake Victoria, Karagwe, North and East Ruanda); the fossilised molluscos fauna of Lake Kiwu yielded two, and four loads came from the western margin of the Central African rift-valley and from the Congo basin. A preliminary report of the geologist's researches will be found in the *Mitteilung a. d. Deutsch. Schutzgeb., Jahrgang, 1908*, page 168.

The expedition's botanical spoils comprise 3,466 specimens. The larger part has already been arranged and classified at the Royal Botanical Museum at Berlin. So far forty-nine new liverworts have been found, and a cursory inspection of the feather-mosses leads one to believe that this figure may be increased;

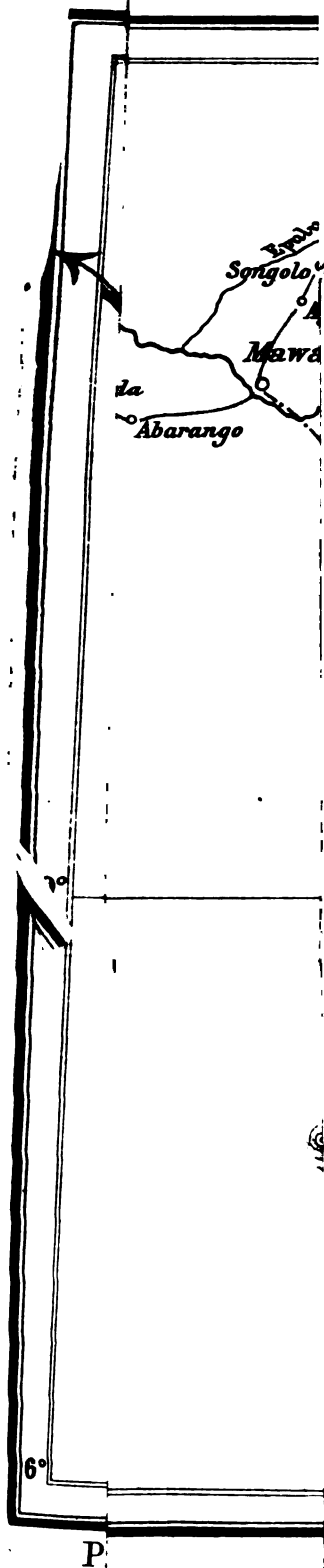
233 new species and four new families of phanerogamous plants were also found. Particular interest attaches to the collections from the Rugege forest and from the volcanic region, which fill up a considerable gap in our knowledge of African alpine flora. A scientific treatise dealing with these collections has already appeared in the proceedings of the Royal Prussian Academy of Science, Berlin, for the year 1909, entitled: "*Die Vegetationsverhältnisse der zentralafrikanischen Seen-zone vom Viktoria-See bis zu den Kiwu-Vulkanen. Bericht über die botanischen Ergebnisse der Expedition des Herzogs Adolf Friedrich zu Mecklenburg, 1907-1908.*" (J. Mildbraed.) The most important result obtained, however, is the establishment of the fact that a large number of botanical families and species which had hitherto been believed to be limited exclusively to the forests in the neighbourhood of the west coast, really reach as far as to the region of the upper Ituri, almost to the foot of the Ruwenzori chain, and that therefore the great African hylæa forms one homogeneous botanical whole.

Schubotz throws light on the zoological work done in a preliminary report published by him in the proceedings of the Berlin Society of Naturalists, year 1909, No. 7 (*Vorläufiger Bericht über die Reise und die zoologischen Ergebnisse der deutschen Zentralafrika-Expedition, 1907-1908, von Hermann Schubotz*). The collection, which was transferred to the Berlin Zoological Museum, comprised all sections of the animal kingdom, and consisted numerically as follows: 834 mammals (hides, skeletons, skulls, specimens in methylated spirits), 800 bird-skins, 173 reptiles, 204 amphibious animals, 708 fish, 1,452 decapods, 686 molluscs, 7,603 insects and several hundreds of smaller forms, 1,181 arachnidæ, 167 myriopoda, 637 worms (oligochæta, hirudinidæ, nematoidea, cestoeida, and turbellaria), 40 glasses of plankton, 4 glasses of bryozoa, 27 spongiæ, and various swamp and moss specimens. The classification of this material by learned experts, which unquestionably contains a great number of new forms, especially among the lower animals, will be a labour of some years. There are a considerable number

of new vertebrates too. Twenty-five new species of birds were discovered, the classification of which was greatly facilitated with the aid of Reichenow's great work on African ornithology.

The ethnographical-anthropological results were as follows: 1,017 skulls and about 4,000 ethnographica were collected, 4,500 people measured, 700 photographs and thirty-six plaster of paris masks taken (eight Batwa and five Wambutti amongst them), and 87 phonograms and 37 languages recorded. A preliminary report from Czekanowski's pen on the anthropological-ethnographical labours of the expedition during the period from the 1st of June, 1907, to the 1st of August, 1908 (including an ethnographical chart of the Nile-Congo-Intermediate territory), is to be found in the *Zeitschrift für Ethnologie*, Jahrgang, 1909, volume V.

Such, in broad outlines, are the scientific results of our expedition into the heart of Africa in so far as they can be summed up at present. They have not been left without recognition by the critical experts of the Royal Berlin Museums, and should they on closer investigation prove to be a valuable contribution to our knowledge of Equatorial Africa, as is confidently expected, we shall think ourselves fully rewarded for our labours and hardships.



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